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Vol. IX APRIL, 1919 No. 4

INFANT MORTALITY IN THE UNITED STATES DURING ONE YEAR OF WAR.

FREDERICK S. CRUM, PH. D.,
Assistant Statistician, Prudential Insurance Company, Newark, N. J.

Read before Vital Statistics Section, American Public Health Association, at Chicago, Ill., December 11, 1918.

Dr. Crum shows that infant mortality is largely related to season and place. The effect of these factors is greatest where extremes of temperature and humidity are greatest. He suggests for the most hopeful method of attack the education of the mother. He lays emphasis on the importance of breast feeding.

THE United States became one of the belligerents in the world war in April, 1917. In the *Economic World* of July 7, 1917, Dr. Frederick L. Hoffman contributed an article entitled "Weekly Index Numbers of National Health and Wellbeing." In that paper Doctor Hoffman suggested six groups of data which possibly might serve as a basis, if collected regularly, promptly and at frequent time intervals—preferably weekly—as indexes of national health and wellbeing.* The general urban death rate was placed first in the list of six groups of data. This particular suggestion was so favorably received by the Division of Vital Statistics of the United States Bureau of the Census that by September, 1917, its chief, Dr. W. H. Davis, had succeeded in interesting several of the health departments of our larger cities to the extent that they were telegraphing weekly to the Census Bureau their reported mortality from all causes, all ages and under one year of age. By October, 1917, some 40 large cities were coöperating in the weekly contribution of their mortality data. The following paper is based upon these complete returns from 46 cities for the year ending September 28, 1918.

Invaluable as these data are in themselves it is regrettable that we do not have equally extensive and reliable information either of total population or of births. Never before in our history has the need of more frequent census-taking of our population and more accurate and complete birth registration been so urgent as during the last two years. A national census of population as of 1915 or later

*The six groups of data suggested by Dr. Hoffman for weekly statistical averages of social wellbeing, were as follows:

I. The general urban death rate.
II. The sickness rate in industry.
III. The accident rate in industry.
IV. The number of arrests in large cities.
V. City expenditures for poor relief.
VI. The ratio of unemployment.

would have been of inestimable service to the government in many directions, and only when our birth registration becomes more universally complete can we hope accurately to measure and compare the trend of infant mortality in the United States by weeks, months and years, or, by longer time intervals.

In the following table are presented the names of the 46 cities from which data have been derived for this paper—their geographical grouping, estimated populations under one year of age, reported infant deaths during the year ending September 28, 1918, and the infantile death-rates based upon such estimated populations. These cities together embraced a total population of 19,478,921 in 1910, or 21.2 per cent of the aggregate population of the continental United States, exclusive of Alaska. Probably at the present time these 46 cities contain close to 25 per cent or one-fourth of the entire population of the United States.

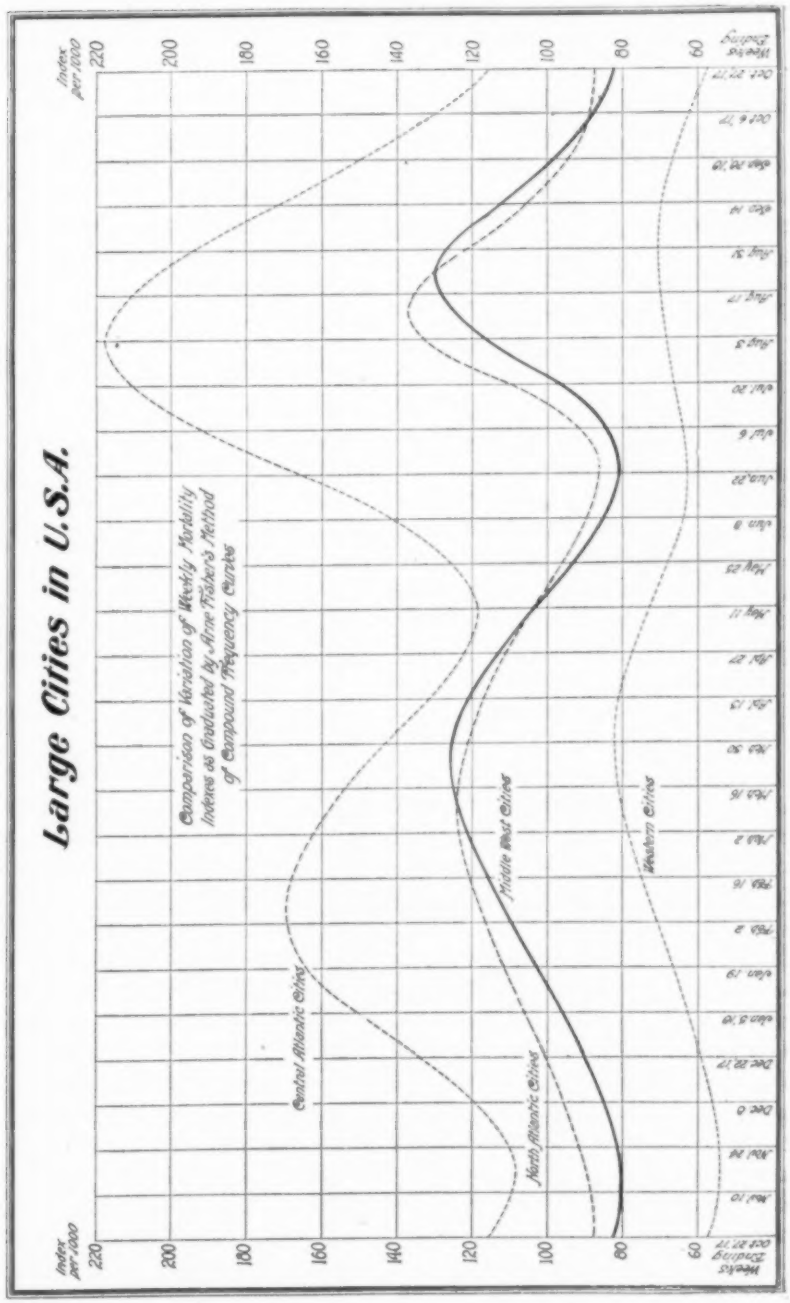
During the year ending September 28, 1918, there were 50,875 deaths of children under one year of age in these 46 cities combined, and the estimated aggregate population under one year of age was 479,665. This is the largest infant mortality experience recorded weekly that has ever been secured in the United States and it is doubtful if any other country can present an equally large experience collected in one year and reported by weekly time intervals.

In the following table only a summary of the infant mortality for the year ending September 28, 1918, is presented. According to this summary the lowest rate was reported from Spokane, Wash., or 44.0 per 1,000 estimated infant population; the highest rate was reported from Lowell, Mass., or 192.8 per 1,000 estimated infant population, but Baltimore, Md., with a rate of 187.1 was a close second. All of the Western cities reported comparatively low infantile death-rates and 6 of the 14 cities of the Middle Western group reported rates under 90 per 1,000. Only two cities of the North

COMPARATIVE INFANT MORTALITY OF 46 LARGE AMERICAN CITIES.—YEAR ENDING SEPTEMBER 28, 1918.

Cities	Estimated Population Under 1 Year	Reported Deaths Under 1 Year	Death-Rate Per 1,000 Est. Pop Under 1 Year
North Atlantic			
Albany	1,631	224	137.3
Boston	15,510	2,011	129.7
Buffalo	10,087	1,547	153.4
Cambridge	2,537	251	98.9
Fall River	3,583	625	174.4
Jersey City	7,283	814	111.8
Lowell	2,505	483	192.8
Newark, N. J.	10,260	1,067	104.0
New Haven	3,426	411	120.0
New York	133,110	11,593	87.1
Philadelphia	36,793	4,748	129.0
Pittsburgh	13,834	1,915	138.4
Providence	5,510	667	121.1
Rochester	4,897	563	115.0
Syracuse	2,933	454	154.8
Worcester	3,638	432	118.7
Total	257,537	27,805	108.0
Central Atlantic			
Atlanta	4,256	380	89.3
Baltimore	10,882	2,036	187.1
Richmond	3,349	476	142.1
Washington	6,130	844	137.7
Total	24,617	3,736	151.8
Southern			
Birmingham	4,212	431	102.3
Louisville	4,046	432	106.8
Memphis	2,582	298	115.4
Nashville	2,292	267	116.5
New Orleans	7,616	888	116.6
Total	20,748	2,316	111.6
Middle Western			
Chicago	57,312	6,093	106.3
Cincinnati	6,959	735	105.6
Cleveland	17,005	1,800	105.9
Columbus	3,433	410	119.4
Dayton	2,450	251	102.4
Grand Rapids	2,883	217	75.3
Indianapolis	4,671	536	114.8
Kansas City, Mo.	4,740	514	108.4
Milwaukee	9,479	1,077	113.6
Minneapolis	6,723	594	88.4
Omaha	2,835	251	88.5
St. Louis	13,912	1,265	90.9
St. Paul	4,469	365	81.7
Toledo	3,858	484	125.5
Total	140,729	14,592	103.7
Western			
Denver	4,322	397	91.9
Los Angeles	8,032	577	71.8
Oakland	3,674	214	58.2
Portland, Ore.	4,595	328	71.4
San Francisco	6,971	475	68.1
Seattle	5,350	299	55.9
Spokane	3,090	136	44.0
Total	36,034	2,426	67.3

CHART NO. 1.


Infant Mortality Statistics
Large Cities in U.S.A.
Comparison of Variation of Weekly Mortality Indexes as Graduated by Mine Fisher's Method of Compound Frequency Curves
Index per 1000
220
200
180
160
140
120
100
80
60
Central Atlantic Cities
North Atlantic Cities
Middle West Cities
Western Cities
Weeks Starting
Oct 27 '17
Oct 6 '17
Sept 29
Sept 17
Sept 3
Aug 20
Aug 6
July 23
July 9
June 25
June 11
May 27
May 13
April 29
April 15
April 1
March 18
March 4
Feb 18
Feb 4
Jan 21
Jan 7
Dec 24 '16
Dec 10
Nov 26
Nov 12
Oct 29
Oct 15

Atlantic group, Cambridge, Mass., and New York City, reported infant mortality rates of less than 100 per 1,000; in the Central Atlantic group Atlanta alone gave a rate less than 100 (89.3) and there was no city in the Southern group with a rate lower than 100.

In chart No. 1 is presented a comparative picture of the infant mortality by weeks for the 41 representative large cities of four geographical divisions of the United States. The year covered by this and the four succeeding charts ends September 28, 1918. These curves represent the carefully graduated weekly rates of infant mortality—all reduced to a yearly basis. It has been necessary to estimate the populations under one year of age and to use such estimates rather than living births in the calculations of the infant mortality rates. No claim is made, therefore, that these curves necessarily represent the exact or actual infantile death rates, but we do claim that they undoubtedly approximate them with sufficient closeness to serve as a valuable index for general purposes of comparison.

This first chart brings out clearly and emphatically two salient characteristics of infant mortality in this country, namely, that it is largely dependent upon *season* and *place*, or *location*. Season reveals its effect in all sections of the United States. Its effect, however, is greatest where the extremes of temperature and humidity are greatest and least where variations of the temperature and other climatic conditions unfavorable to infants are least extreme. The Central Atlantic cities, as a group, show highest winter and summer peaks of mortality represented respectively by rates of 179.7 for the weeks ending February 9 and 23 and 238.9 for the week ending August 10. On the other hand, the Pacific Coast or Western cities, as a group, show spring and autumn peaks of mortality represented respectively by rates of 90.9 during week ending February 9 and 83.9 during the week ending August 31.

The cities of the North Atlantic and Middle West groups occupy a position about midway between those of the Central Atlantic and Western groups. The seasonal highest peaks for the North Atlantic group of cities were 136.7 for week ending January 12, 1918, and 159.1 for week ending August 10; and for the Middle West group the seasonal highest peaks were 133.4 for the week ending April 13, 1918, and 151.1 for the week ending August 10, 1918.

The lowest seasonal infant mortality rates for the four groups of cities were as follows:

DEATH RATES PER 1,000 ESTIMATED POPULATION UNDER ONE YEAR OF AGE.

Groups of Cities	1917 Rates	1917 Week Ending	1918 Rates	1918 Week Ending
Western	40.4,	Dec. 15, and	50.5,	June 15
Middle West	75.4,	Dec. 8, and	68.7,	June 8
North Atlantic	74.1,	Oct. 13, and	76.1,	June 15
Central Atlantic	93.2,	Oct. 20, and	112.1,	June 1

The high points or peaks of infant mortality come somewhat earlier in the year in the Central Atlantic than in the three other groups of cities, but this is more noticeable in the winter or early spring than in the summer or early autumn mortality. The dates of the high and low mortality rates are so dependent upon temperature and humidity that they undoubtedly will vary from year to year, —depending upon the dates of the extremes of heat, cold and humidity as expressed in weekly means of these climatic factors. Excellent illustrations of this close correlation of temperature and infant mortality are presented in the two accompanying charts, Nos. 6 and 7, showing the maximum and minimum temperatures and infant mortality rates, by weeks, for each of the six years, 1907–1912, for New York City and Chicago. The increase in infant mortality with extremes of high and low temperatures and the

greater excess of infant mortality in the hot as compared with the cold seasons in New York City and Chicago are clearly demonstrated by these graphs.

Chart No. 2 shows the observed and graduated weekly infant mortality indexes of 16 North Atlantic cities for the year ending September 21, 1918. The observed rates for these cities, as the chart shows, are not so irregularly variant that graduation is difficult. The graduated rates correspond closely in the main with the observed rates. The weeks ending January 12 and August 12 represent, respectively, the highest observed rates. The high points on the graduated curve occur in the middle of March and the middle of August, respectively.

Chart No. 3 gives similar details for the four cities combined which are included in the Central Atlantic group. The generally high rates in this group are attributable in part to the large negro element in the population of Baltimore, Washington, Richmond and Atlanta. It is unfortunate that the white and colored infant deaths were not separately reported for it is a well-known fact that the negro infant mortality is much higher than the white infant mortality. The same observation applies with equal force to the adult population. To obtain proper health indexes or norms for cities or sections with large negro populations it is, therefore, necessary that deaths be reported with distinction of color in order that separate norms may be constructed for these two essentially different elements of the population. The weeks ending February 9 and August 3, respectively, represent the highest points reached by the graduated curve for this group of cities. The variations in the observed rates are much wider in Chart 3 than in Chart 2. Smaller numbers, the negro element, and possibly climatic and other factors will readily account for the wider variations in the Central Atlantic as compared with the North Atlantic cities.

Chart No. 4 shows that the infant mortality of 14 cities of the Middle West group combined presents two seasonal high points on the graduated curves each of about the same height. The week ending March 23 represents the high point of winter and spring excess mortality, while the week ending August 24 shows the highest summer mortality. The highest peak in the observed mortality occurred during the week ending August 10.

Chart No. 5 shows with great clearness the highly favorable infant mortality in the Western cities. Except Denver, all the seven cities in this group are Pacific Coast cities and the favorable effect of this, among other factors, is clearly revealed in the continuously low comparative infant death-rates. The highest observed rate was only about 90, week ending February 9, and the lowest observed rate was 50, week ending June 15. The summer excess infant mortality so noticeable in the Northern and Eastern cities is almost lacking on the Pacific coast. The highest infant mortality in this group occurs in the rainy season when the population is kept indoors more than during any other portion of the year.

Thus far we have not been able to graduate the observed infant mortality rates of the group of Southern cities. The observed rates have been frequently and widely variant throughout the year—probably due to small numbers and the large negro element in the population.

We have been able to compare the infant mortality, based upon births and deaths under one year of age, of New York City during the year ending September 28, 1918, with the previous year.

This comparison shows a difference in favor of the latter year equal to 5.7 per 1,000 living births. This means that the statistics as reported week by week show

CHART NO. 2.

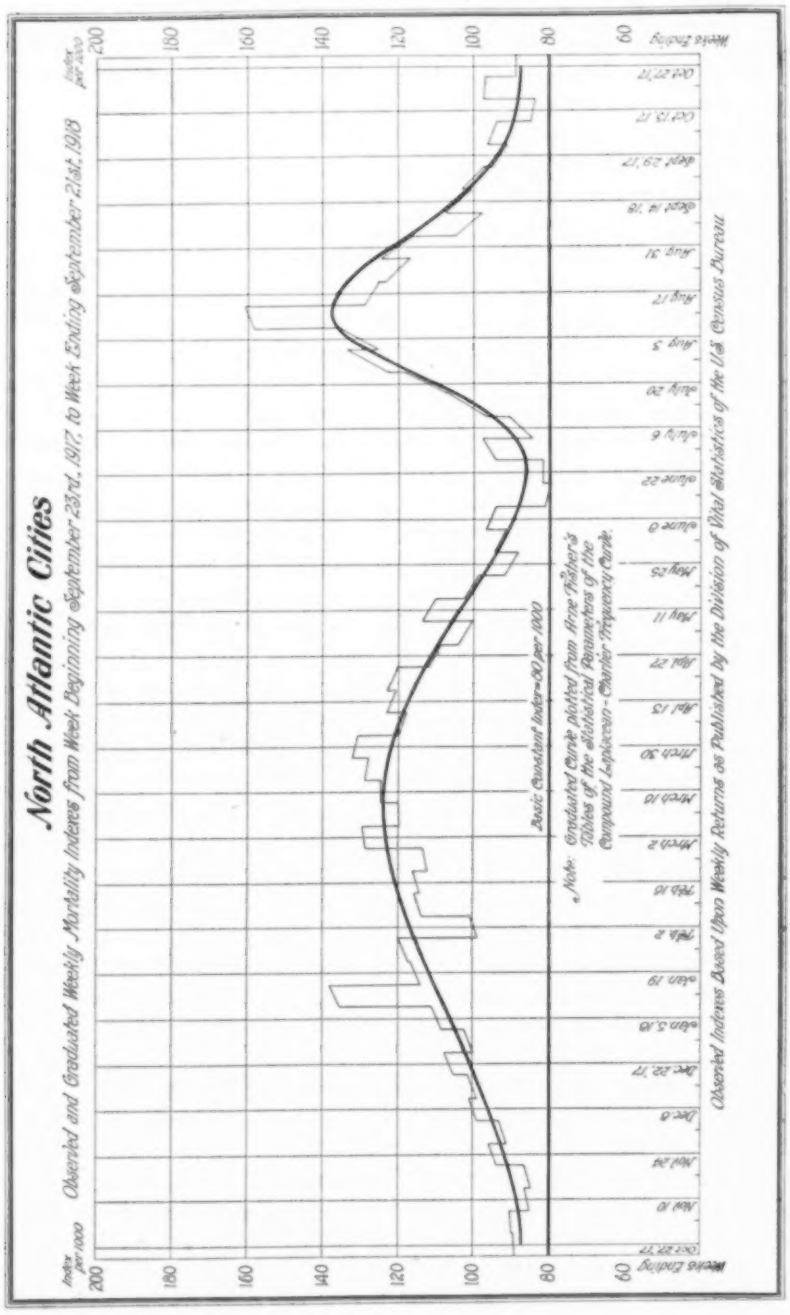
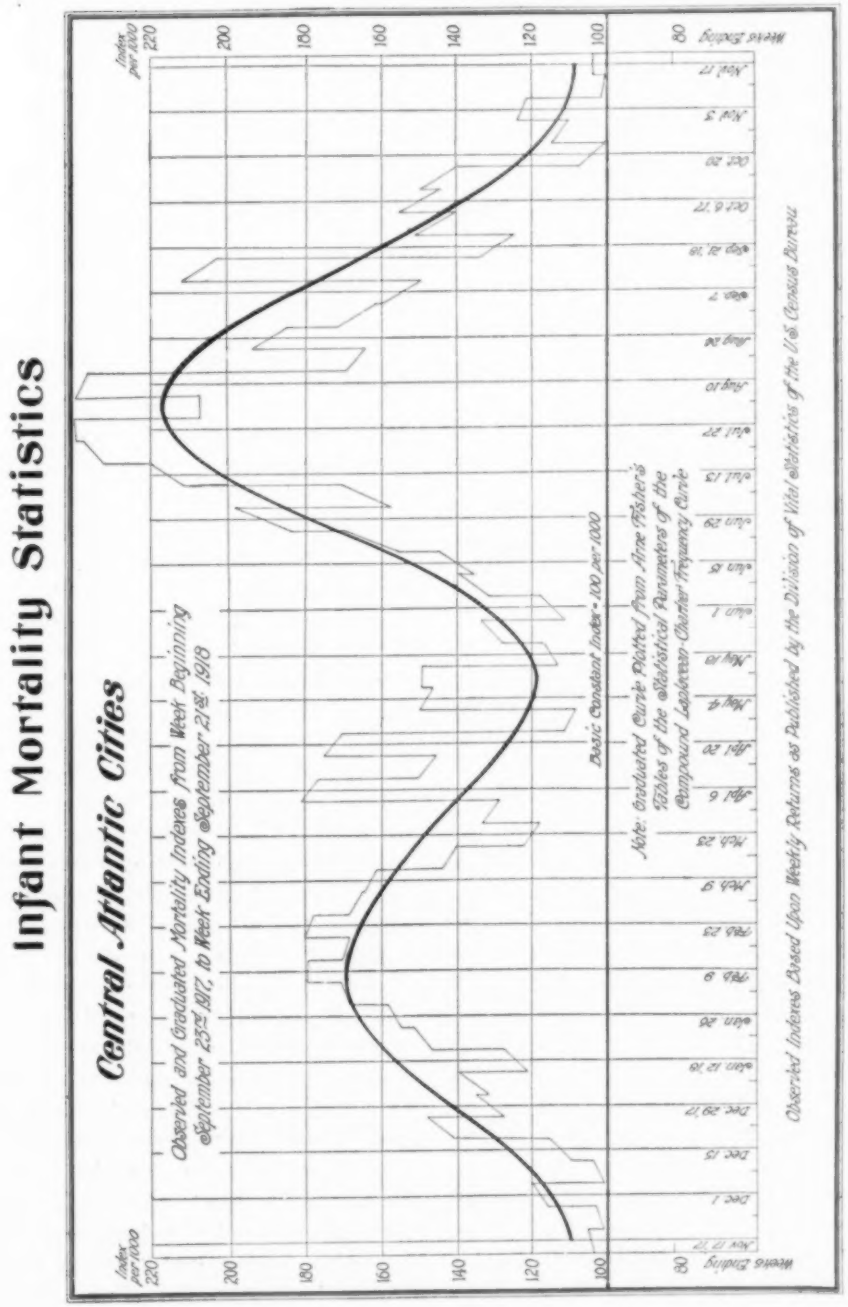

Infant Mortality Statistics
North Atlantic Cities
Observed and Graduated Weekly Mortality Indexes from Week Beginning September 23rd, 1917 to Week Ending September 21st, 1918
Observed Indexes Based Upon Weekly Returns as Published by the Division of Vital Statistics of the U.S. Census Bureau
Note: Graduated Curve plotted from Arne Fisher's Tables of the Statistical Parameters of the Compound Leptokurtic-Cartier Frequency Curve.
Basic Constant Index=100 per 1000
Index per 1000
Weeks Ending

CHART NO. 3.


Infant Mortality Statistics
Central Atlantic Cities
Observed and Graduated Mortality Indexes from Week Beginning September 23rd, 1917, to Week Ending September 21st, 1918
Basic Constant Index = 100 per 1000
Note: Graduated Curve Plotted from Arne Fisher's Tables of the Statistical Parameters of the Compound Laplacean-Charlier Frequency Curve
Observed Indexes Based Upon Weekly Returns as Published by the Division of Vital Statistics of the U.S. Census Bureau
Index per 1000
Weeks Ending

a saving of 800 infant lives, or 800 more infants would have died in New York City during the year ending September 28, 1918, had the average rate of the previous year continued. The table follows:

COMPARATIVE INFANT MORTALITY RATES
NEW YORK CITY.

Period	Reported Births	Reported Deaths, Ages Under 1 Year	Infant Death-Rate Per 1,000 Living Births
Oct. 1, 1916–Sept. 29, 1917	140,758	12,426	88.3
Sept. 30, 1917–Sept. 28, 1918	140,315	11,593	82.6

For Newark, N. J., we have been able to compare similarly the infant mortality rates of the two years, October, 1916, to September, 1917, and October, 1917, to September, 1918, with the following result:

COMPARATIVE INFANT MORTALITY RATES
NEWARK, N. J.

Period	Reported Births	Reported Deaths, Ages Under 1 Year	Infant Death-Rate Per 1,000 Living Births
Oct., 1916–Sept. 1917	11,826	986	83.4
Oct., 1917–Sept., 1918	11,863	1,118	94.2

The Newark infant mortality experience as reported shows a decided increase in the infant death-rate during the latter as compared with the former year, or an increase from 83.4 infant deaths per 1,000 living births during the year ending September, 1917, to a rate of 94.2 during the year ending September, 1918. The excess mortality of the latter year as compared with the former is represented by 128 deaths.

It is interesting to note that in Newark 37 more births were reported during the latter year than during the former, while in New York City 443 fewer births were reported during the year ending September, 29, 1918, than during the previous year. We have no way of determining whether or not birth reports are more complete in one city than in the other. It is quite possible, however, that both in New York and Newark, owing to scarcity of physicians and overwork of those remaining in civilian service, the birth reporting has been somewhat less complete during the latter than during the former of the two years under comparison.

The data now available do not permit of sufficiently extensive and accurate comparisons to warrant a final conclusion as to the effect which our participation in the war has had or may still have upon infant mortality. The weekly health index figures taken in the mass for the year ending September 28, 1918, do not indicate that there has been any increase. A few cities, like Newark, N. J., show a distinct upward trend, but the general tendency seems to have been downward. If this favorable indication, based upon approximate population estimates, is the fact the credit probably is very largely due to the vision of the Federal Children's Bureau in inaugurating a nation-wide campaign of education by making 1918 a Children's Year and offering the weighing and measuring campaign as something concrete which every administrative unit, large and small, could tie to, and which offered an excellent opportunity for the closest coöperation between governmental and voluntary organizations in the work of infant and child conservation. Wherever this campaign was carried on extensively it apparently had a marked and favorable effect upon infant life saving. The most competent observers have stated that similar efforts in England, New Zealand and elsewhere have yielded favorable results, and there is no good reason to believe that these child-conservation campaign in this country during the past year have been less successful. In Newark, N. J., the suggestions of the

CHART NO. 4.

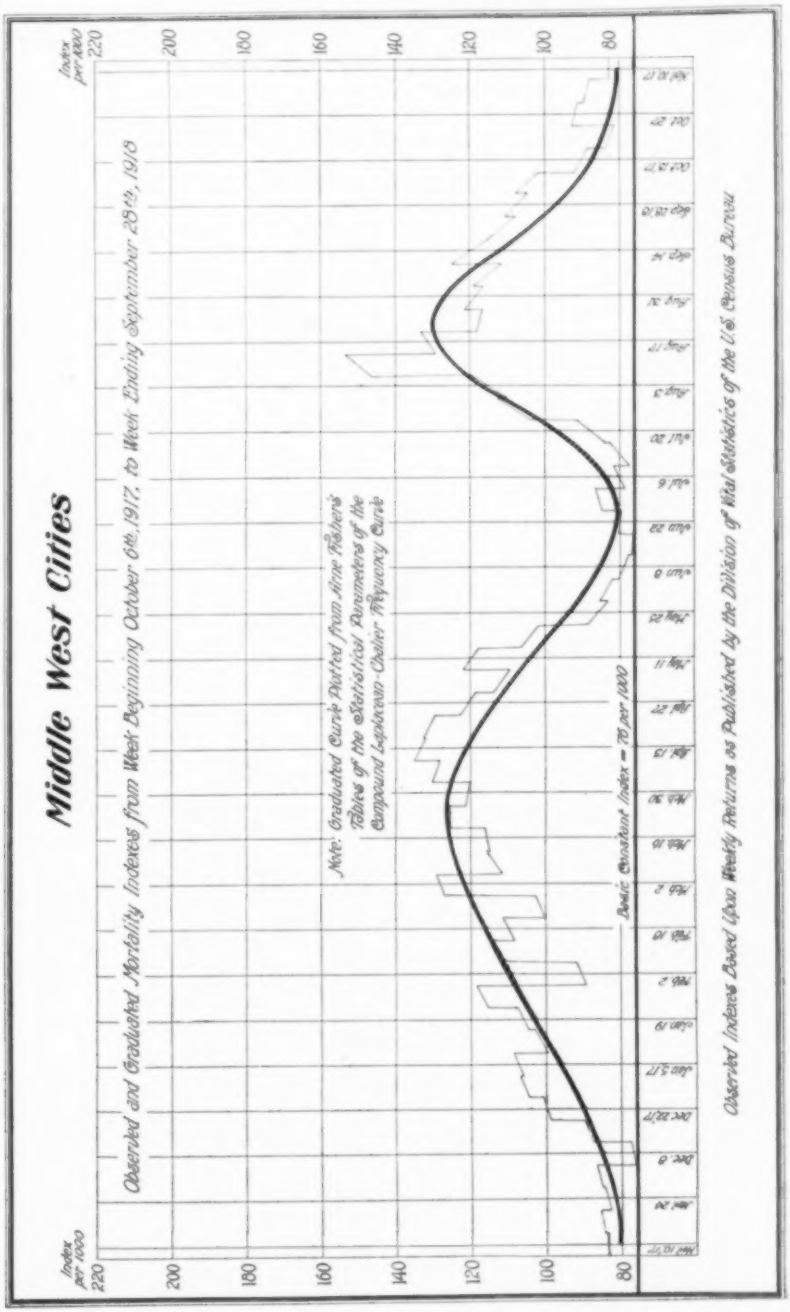
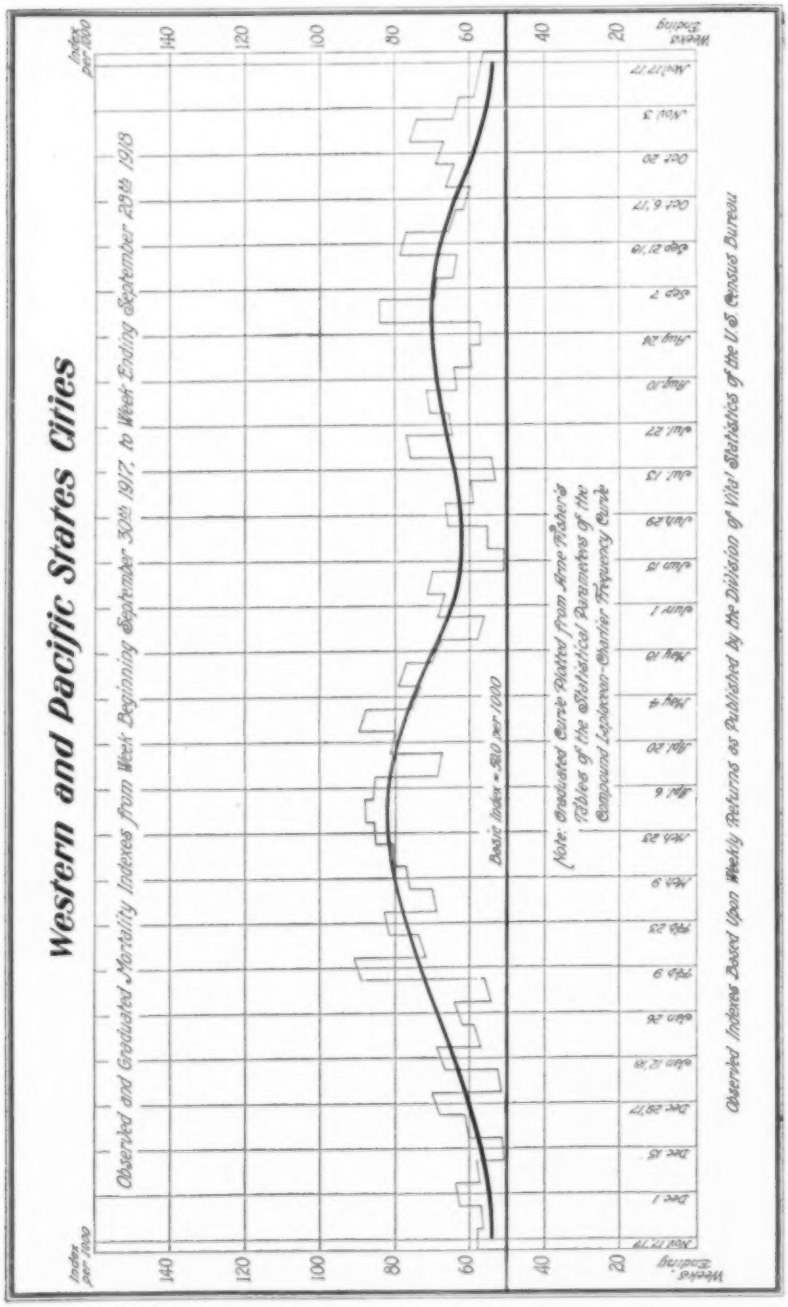

Infant Mortality Statistics
Middle West Cities
Observed and Graduated Mortality Indexes from Week Beginning October 6th, 1917, to Week Ending September 28th, 1918
Note: Graduated Curve Plotted from Nine Points Taken from the Statistical Parameters of the Compound Laplacean-Gaussian Frequency Curve
Basic Constant Index = 76 per 1000
Observed Indexes Based Upon Weekly Returns as Published by the Division of Vital Statistics of the U.S. Census Bureau
Index per 1000
Index per 1000

CHART NO. 5.


Infant Mortality Statistics
Western and Pacific States Cities
Observed and Graduated Mortality Indexes from Week Beginning September 30th 1917, to Week Ending September 29th 1918
Basic Index = 310 per 1000
Note: Graduated Curve Plotted from Arne Fisher's Tables of the Statistical Parameters of the Compound Lexinian-Charlier Frequency Curve
Observed Indexes Based Upon Weekly Returns as Published by the Division of Vital Statistics of the U.S. Census Bureau
Index per 1000
Weeks Ending

Federal Children's Bureau were not acted upon until late in 1918 with the probable result that the infant mortality of that city for 1918 will be from 10 to 20 per 1,000 living births higher than during 1917.*

The influenza epidemic has already resulted in a large infant mortality. The effect of the epidemic is seen clearly in the 46 individual cities which report weekly to the U. S. Bureau of the Census and, of course, it is equally apparent in the infant deaths and death-rates by geographical groups of cities. Even in the North Atlantic cities, which include Boston, the effect of the epidemic was not reflected in the infant mortality rate prior to the week ending September 14, 1918. By October, first the epidemic was clearly reflected in the infant death-rates of several of the cities in the North Atlantic group.

Comparing the infant mortality during the nine weeks ending November 30, 1918, and the nine weeks ending December 1, 1917, we find that it was 70 per cent higher in 1918 in the North Atlantic cities; 72 per cent higher in the Central Atlantic cities; 61 per cent higher in the Southern cities; 33 per cent higher in the cities of the Middle West; and 41 per cent higher in the Western cities.

The details of this comparison are presented in the following table:

COMPARISON OF MORTALITY—UNDER 1 YEAR OF AGE

BY GROUPS OF CITIES.

DEATH-RATES PER 1,000 EST. POP. UNDER 1 YEAR OF AGE, REDUCED TO YEARLY BASIS.

Groups of Cities	Nine Weeks Ending Dec. 1, 1917	Nine Weeks Ending Nov. 30, 1918	Per Cent Increase 1918 over 1917
North Atlantic	90.2	153.2	70
Central Atlantic	117.5	202.4	72
Southern	84.9	137.1	61
Middle Western	89.3	117.8	33
Western	65.1	91.9	41

*Data now available show that for the calendar year 1918 the infant mortality rate of Newark (Infant deaths per 1,000 reported living births) was 104.7 against a rate of only 87.6 during the calendar year of 1917.

In New York City, Chicago and Newark, combined, the comparative infant mortality during these two nine-weeks periods was as follows:

RATES PER 1,000 EST. POP. UNDER 1 YEAR OF AGE, REDUCED TO YEARLY BASIS.

1917		1918		Per Cent Increase 1918 over 1917
Week ending	Rates	Week ending	Rates	
Oct. 6	99.2	Oct. 5	87.8	−11.5
13	58.8	12	106.2	+80.6
20	85.8	19	127.0	+48.0
27	85.8	26	204.7	+138.6
Nov. 3	73.1	Nov. 2	177.8	+143.2
10	77.0	9	128.8	+67.3
17	79.8	16	101.1	+26.7
24	84.0	23	83.7	− 0.4
Dec. 1	82.4	30	83.2	+ 0.9
Average (9 weeks)	80.8	Average	122.3	Average +50.1

This comparison shows that the highest rate was attained during the week ending October 26, 1918 (204.7), when the influenza epidemic apparently produced its maximum effect, directly as a cause of infant deaths and indirectly through the deaths of other members of the family with resultant lessening of infant care. By the week ending November 23, 1918, the infant mortality in these three cities had returned to the 1917 level and remained there during the week ending November 30.

The application of the mathematical methods to the data of the influenza epidemic will perhaps make possible a very accurate determination of the probable excess of infant mortality and adult mortality from this scourge, but this cannot be done until the epidemic is ended.

Through the various intensive studies of infant mortality by localities such as those already made by the Federal Children's Bureau in Johnstown, Pa., Manchester, N. H., Brockton, Mass., Montclair, N. J., Saginaw, Mich., New Bedford, Mass., and Waterbury, Conn.,* we are learning many interesting and valuable facts relating to the fundamental or underlying causes of infant mortality.

*See paper by Miss Julia Lathrop in this issue.

CHART NO. 6.

Infant Mortality and Temperature

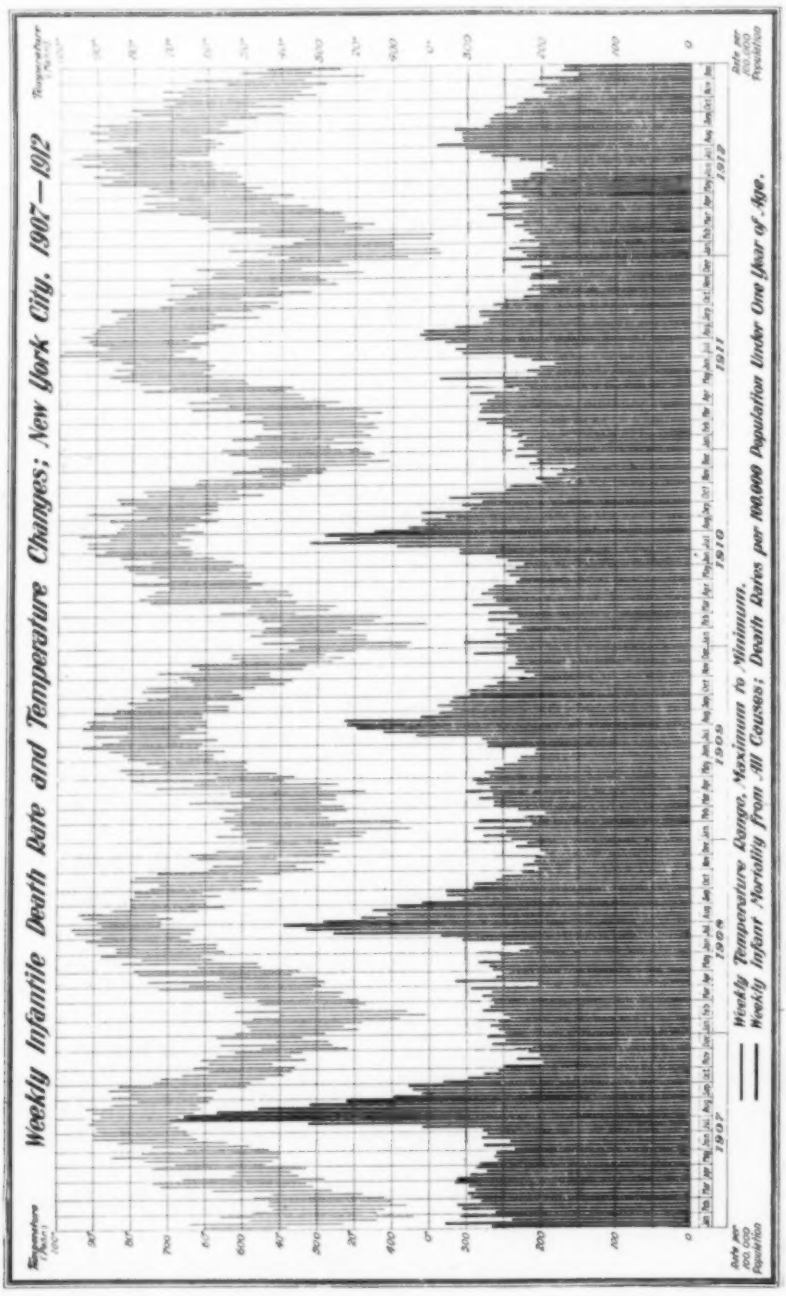
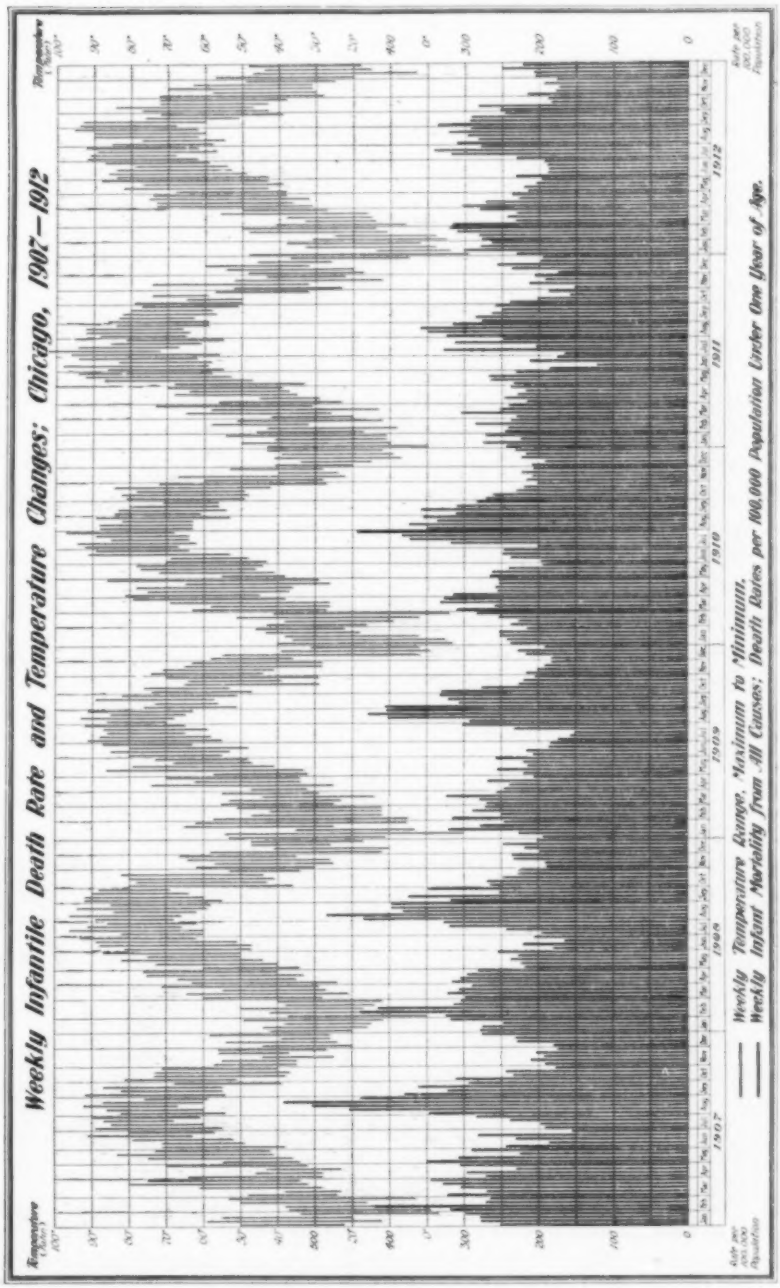

Weekly Infantile Death Rate and Temperature Changes; New York City, 1907—1912
Weekly Temperature Range, Maximum to Minimum.
Weekly Infant Mortality from All Causes; Death Rates per 100,000 Population Under One Year of Age.
1907
1908
1909
1910
1911
1912

CHART NO. 7.

Infant Mortality and Temperature


Weekly Infantile Death Rate and Temperature Changes; Chicago, 1907—1912
Weekly Temperature Range. Maximum to Minimum.
Weekly Infant Mortality from All Causes; Death Rates per 100,000 Population Under One Year of Age.
1907
1908
1909
1910
1911
1912

Equally valuable are the studies which are being made by the various child hygiene bureaus, departments or divisions of our state and municipal health organizations. The Cincinnati Social Unit Organization, in its intensive social work in the Mohawk-Brighton district of Cincinnati, represents one of several special activities which are throwing new light upon the many and complex problems of infant mortality.

The experiences of England, France, New Zealand, the United States and other countries seem to prove quite conclusively that the most immediately hopeful method of attack upon infant mortality is through education of the mother. Particularly should she be taught how properly to care for herself before and after the birth of her child, and the great importance of breast-feeding of the infant. In New Zealand where these methods have perhaps been carried farthest under the auspices of the Royal New Zealand Society for the Health of Women and Children, but in coöperation with the government, the infant deaths for the year 1917 were only 48.2 per 1,000 of living births. The war seems to have had little, if any, effect upon the infant death-rate of New Zealand, where, as in the United States, organizations for child-conservation were already existent when the war broke out and the continued activities of which have kept up a lively and wide public interest in the work.

The charts here presented through the courtesy of the Prudential Insurance Company of America, depend for their construction on a formula developed by Mr. Arne Fisher, who has made use of Laplacean-Charlier frequency curves, to establish a basic or inherent mortality rate. This may be due to "heredity and environment," and is practically independent of seasons or epidemics. A basic constant is established against which the actual weekly mortality is plotted. It is an interesting process, the details of which are somewhat too technical to be presented here in detail. —Editor.

◆

Control of Measles.—In controlling epidemic measles pupils who had the disease were excluded from school, and those having German measles were quarantined at home. Other school members in the family were allowed to attend school for fourteen days after the first exposure, but were then required to remain at home a week. No person can be released safely from quarantine until all symptoms, glandular enlargement in particular, have disappeared and he is free of all complications.—*Minn. Health Journal*, Oct. 17, 1918. (*M. T.*)

✤

Rochester's Clean Streets.—While a report on the Problem of Street Cleaning in the City of Rochester, N. Y., issued in October, 1918, by the Rochester Bureau of Municipal Research does not discuss the health phase of the problem, it is so full of valuable information on methods and costs that it should prove of value to those health officers who feel that there is a direct connection between clean streets and the public health and who, therefore, are urging reforms in the direction of more up-to-date street-cleaning methods. (*M. T.*)

PRESENT STATUS OF PUBLIC HEALTH ADMINISTRATION.

OSCAR DOWLING, M. D.,
President, Louisiana State Board of Health.

Presidential Address before Public Health Administration Section, American Public Health Association, at Chicago, Ill., December 10, 1918.

That public health administration is really a business is the message of Dr. Dowling. It will not be successful without business methods. These must include well-trained, full-time health officers and adequate appropriations.

I AM sure everyone will agree that when we entered the great war an era in our national history ended. From the retrospect we can see clearly that individualism controlled the nation; that individualism was the initiative back of our urban development, the "push" which made progress concrete in many lines—progress of which we are all justly proud.

Though some few had fully realized the futility of attempting to build a great nation on an individualistic foundation, it took the great social cataclysm of the war to bring home to us the narrowness, sordidness and selfishness of our policy and our aims. No nation with a background of selfishness could hope to have the "vision."

We had subconsciously the conviction that whenever it became necessary we would unite for any great national aim. This was not illogical. We have lived in reverence of the sacrifices and the struggles of our forefathers; we could do no less than they. There were times in this emergency when unity of purpose and action seemed doubtful, but no loyal American citizen ever had a skeptical moment as to the outcome. Money and patriotic service were given without stint, and had any universal self-sacrifice been imperative every man, woman and child would have stood the test. This does not include the disloyal, for they would not have counted in the supreme crisis. They would have been taught what to do and made to do it.

We have learned, though imperfectly, from this experience, that in solidarity there is strength, and that it is the only kind of force which counts in a national emergency. Correlative with this, we have learned the importance of an executive with full power. This is really what solidarity means. It implies selection of an executive and support of him in the measures agreed upon.

To apply the principle, in no line of activity was the demonstration of the need for coöperation and loyalty to organization more evident than in the health work; true of military and civilian service alike. The medical profession united for the common cause with a zeal which cannot be too highly commended. It will go down in history as a test of which any profession may well be proud.

If experience were needed to strengthen the lesson learned by the war the widespread prevalence of influenza gave it. I think of the days of our epidemic as one long nightmare. Urgent, pitiful calls for help by phone, by wire, by letters, through health officers and other officials, through friends and enemies, had to be met with the same answer—"We will do what we can. Our physicians (we had twenty-five in the field) are all on assignments. As fast as they can be

reassigned your call will be answered." Nurses, of course, were impossible after the first five or six days, so many having "gone down" with the disease.

These appeals are positive and evident proof of what we have known—the condition that exists in many states—the lack of dependable local health organization. In Louisiana the law says every parish and municipality shall have an organized health board with an executive, but with the appropriations made there are no full-time men, except in a few cities.

Fundamental then to improvement is an adequate appropriation which will make it worth while for a man worth while to undertake the business of the protection and the promotion of the health of the people within his jurisdiction. I think I have said to you before—you will pardon my saying it again—that health administration is a business proposition; haphazard effort accomplishes nothing. Moreover, it is a business which is vital to the well-being, physical and moral and social, of the community; and it may carry with some to know that the commercial value of health—therefore health organization—is very great.

Funds with which to operate are essential—without sufficient money no organization or institution can do successful work. In health activities the qualifications of those who direct are equally important. In every state, in every city, that I know of, fitness for the job is not considered. Men are chosen because of their party affiliations. If there are exceptions, they are very few. This policy, or habit of mind of the political factions, is particularly vicious when applied to the selection of health officials. The people's money may be wasted and not have untoward results; their commercial projects may lie in abeyance or fail and the consequences be not important, but if money appropriated for disease prevention and sanitary reforms is unwisely expended or thrown away in foolish extravagance, the results mean suffering and likely a higher death-rate. A man who is unworthy of the position of director of health, either because of his inability, or his lack of grasp of the situation, or his lack of conscience as to its responsibility, can not or will not expend appropriations wisely.

I need not say how great the opportunities are for graft in health work. I think I need not say how many persons may be paid for "putting in time" without giving value received. The temptations to permit this are very great. It is the train of evils which follows appointment by a political faction. There is another point. It is, that of all service, health service should be placed on a basis of fairness and justice. Can this be, when the director is desirous of pleasing those who gave him the appointment? I put it mildly; if I wanted to put it baldly, it would not be "desirous of pleasing" but "under obligation to obey orders."

The status of health work is determined by these two features. There are honest and faithful men who have overcome to a degree the difficulties, but the city or state which permits the employment of the executive health officer because of his "party" and the expenditure of funds by an incompetent person, needs but to look into its death roll and its morbidity rate to determine the character of the service rendered.

There is one other important reform which only a few states and cities have yet put into effect.

The antiquated, loose organization of several persons whose occupations and places of residence prevent their knowing the work in detail or the poli-

cies, yet whose appointment gives them power to approve or condemn, belong to an age that is past.

Political debts are paid by appointments—meant to be honorary. Again, in some activities—very few—this does not necessarily imply disaster. In health work it does. Taking the lesson from cities which have successfully tried the city manager plan, responsibility should be placed on one officer. He should be approved or condemned according to his success or his failure. The people should know where the responsibility rests.

Some states have already adopted the plan. They have done away with boards and have organized a department of health with distinct bureaus, the head of each being responsible for those under him. It is easy to tell in these states in what phases of work progress is made. It is easy to determine who fails. The apportionment of appropriations under this plan may be more equitable. The apportionment can be shifted to meet special emergency needs, and if thought advisable certain lines of work can be emphasized at any particular time.

In suggesting the limitations of our present system, almost universally in effect, I have given in a measure the status of work. The points mentioned are fundamental, and until this is recognized and the system changed I do not believe we can have effective health service.

PRESENCE OF A SPORE-BEARING ÆROBIC GAS-FORMING BACILLUS IN BALTIMORE CITY DRINKING WATER.

C. Leroy Ewing,
Health Department, Baltimore, Md.

In a paper that has the additional merit of brevity Mr. Ewing goes direct to his point, tells what he has seen and suggests that weather may be related to results.

In the customary practice of confirming the presence of B. coli by staining the agar slant there was occasionally found a spore-bearing organism resembling in general appearance the B. subtilis. Although by repeated tests this organism responded negatively to Gram's stain it was not until the publication of Meyer's article* that it was thought to be other than a contamination.

Shortly after the appearance of the above-mentioned article this organism was isolated and found to be identical with the one described by the author both in morphological and cultural characteristics. Upon staining by Gram's method the characteristic forms, the free spore, the spore-bearing cell and the regular rod-shaped, spore-free cell, were identified. Upon slant agar at 37° C. there appeared a characteristic veil-like growth which was very distinctive and of a grayish color. The upper half of the growth was filliform while the lower half was ameboid, with irregular edges. Upon nutrient agar at 37° C. for 24 hours the colonies were small, rather thin and grayish-white in color.

The colonies upon Endo's medium incubated for 24 hours at 37° C. were larger than those upon agar and were of

*Journal of Bacteriology, Vol. III, No. 1.

the shape implied by the term umbilicate. There was a slight sheen around the colony in 24 hours, but at the end of 48 hours the colonies themselves had developed a metallic lustre resembling the B. coli very much in this respect. With lactose, dextrose and saccharose broths the gas formation in 24 hours was slight, but at the end of 48 hours all tubes yielded between 20 and 50 per cent of gas, with an average of about 30 per cent. Litmus milk was acidified and coagulated, the Voges-Proskauer reaction was positive, the indol reaction was negative, and no chromogenesis was noted on any medium used.

A pure culture of the organism was inoculated into the ear vein of a rabbit and the animal chloroformed about a minute later. The body was then incubated for 8 hours at 37° C., but no gas formation was noted at the autopsy and a microscopic examination of the various viscera failed to disclose the presence of any organisms. The organism, therefore, has not the effect of the anærobic Bacillus welchii or so-called gas bacillus.

In studying the occurrence of this organism in the water in relation to the number of examinations made and the average bacterial count at 37° C. and 20° C., the following table will indicate the number of isolations since the first of March when the study began.

Month 1918	No. of Examinations Made	Average		No. of Final Colon Tests	No. of Isolations of Spore-Bearer
		37° Count	20° Count		
March ..	135	10	107	22	10
April....	112	12	177	11	2
May....	133	32	33	15	2
June....	107	22	19	18	0
July	121	33	42	19	0
Aug.....	110	25	12	16	0
Sept.....	99	42	35	30	0
Oct.....	141	50	260	24	0
Nov.....	100	6	11	12	0

Conclusions.

1. The relationship of the number of isolations of the ærobic spore-bearer to the average bacterial count is not evident from the above table, but it has been a matter of interest to note that the isolations were effected in a season of much rain. In fact, there appeared to be a direct connection between the occurrence of a heavy rain and the appearance of this organism and it was remembered that all of the isolations were made immediately subsequent to a protracted period of rainfall. In October the rainfall was slight.

2. It is important to stain the agar culture of the colon bacillus in the final confirmatory test by Gram's method and carefully exclude the formation of spores. If this is not done the ærobic spore-bearing organisms might be mistaken for a rather large form of the colon bacillus, since it is Gram negative.

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Infant Mortality in New Zealand.—New Zealand has steadily decreased her infant mortality rate since 1907 until at the present time only one baby out of twenty dies before it is a year old. In the United States the rate is thought to be about one in eight.

The New Zealand figure has largely resulted from the efforts of the Society for the Health of Women and Children in New Zealand. The working theory of this Society has been that the life and health of the race as well as the babies depends upon the education of the mothers and future mothers.

The chief functions of the Society as shown by the 1913 report are:

1. To educate every woman to fit herself for the duties and responsibilities of maternity with special emphasis on the importance of breast feeding.

2. To acquire and make public accurate information and knowledge in matters affecting the health of women and children.

3. To employ especially trained and qualified nurses whose duty it will be to give advice and assistance gratis in matters pertaining to the health of women and children.

4. To promote legislative reforms in the interest of the health of women and children.

5. To coöperate with any organization working for a like purpose.—*Minn. Health Journal*, Dec. 19, 1918. (*M. T.*)

THE MILK INDUSTRY AND THE WAR.

CHARLES E. NORTH, M. D.,
New York City.

Read before Food and Drugs Section, American Public Health Association, at Chicago, Ill., December 9, 1918

Dr. North knows what he is writing about. No food industry is so much discussed as the production and marketing of milk. Everyone engaged in it places the responsibility somewhere else. Dr. North goes to the root of the matter with facts and figures, and shows lack of coöperation, coördination and organization.

THERE has been a tendency on the part of public health officials to believe that commerce and economics are matters outside of the field of public health work. Questions of price and cost have had but little place in the programs of the American Public Health Association. It is impossible, however, to deal properly with the public health aspects of the milk problem without considering also its economic relations. Quality cannot be considered apart from cost. Many health officers have failed to secure practical results from well-meant milk regulations because of imperfect knowledge of their economic effect.

There is no industry more complex in its organization, nor so filled with small but important details affecting its success, as the business of producing, collecting, handling, transporting, and distributing milk. In the short time at my disposal I can touch only on a few of the more important economic features of this business, but features which I believe every student of public health should consider in attempting to regulate the milk industry.

The magnitude of the milk industry is scarcely comprehended by the general public, and is understood by but few, even of those who are engaged in it. One of the ways for estimating the large position the dairy industry occupies in the economic structure of America is through a consideration of the number of dairy cows on farms in the United States. The U. S. Department of Agriculture has kept a record of the number of farm animals of all kinds, and as a part of this, of the number of cows used for milking purposes. These estimates are published in the Yearbook of the U. S. Department of Agriculture for 1917, and show the number of dairy cows on farms from the year 1870 to the year 1915, and the price per

COWS ON FARMS IN THE UNITED STATES.
(Yearbook U. S. Dept. Agric., 1917.)

Date	Number	Price Per Head	Value	Population of U. S.	Cows Per Capita
1870	10,096,000	$32.70	$330,175,000	38,558,371	.263
1880	12,027,000	23.27	279,899,000	50,155,783	.240
1890	15,953,000	22.14	353,152,000	62,622,250	.242
1900	16,292,000	31.60	514,812,000	75,994,575	.213
1910	20,625,432	35.29	727,802,000	92,757,702	.217
1915	21,262,000	55.33	1,176,338,000	.....	....
1918	23,284,000	70.59	1,643,639,000	105,000,000 Est.	.219

head and total value. For the year 1918 the number has also been estimated by the U. S. Department of Agriculture.

The growth and population of the United States during the same period should be compared in order to show whether the number of dairy cows has fallen behind or kept up with the growth in population. These figures are given in the table on page 259.

The quantity of milk produced for all purposes in the United States is estimated by the U. S. Department of Agriculture in Circular No. 85, Part II, entitled "Dairying." In this estimate the number of dairy cows on farms for 1917 is stated as 22,768,000, producing an average of 3,716 pounds each per annum. The quantity of milk produced is expressed in pounds, and the disposition of the milk through the various channels of trade, whether sold as fluid milk or as butter, cheese, condensed milk, or fed to calves or other farm animals is indicated in the following tabulation:

MILK PRODUCED IN UNITED STATES, 1917.
(U. S. Dept. Agric., Cir. 85, Part II, p. 15.)

Item	Quantity (Lbs.)	Per Cent
Total milk	84,611,350,000	100
Fluid milk	36,500,000,000	43.1
Butter	34,663,853,000	41.0
Cheese	4,200,000,000	5.0
Condensed milk	2,437,500,000	2.9
Ice Cream	3,150,000,000	3.7
Calves	3,666,000,000	4.3

In the above table it is surprising to note what a large percentage of the total milk produced goes into the manufacture of butter, the quantity being very nearly as much as the quantity of milk sold in fluid form as milk or as table cream.

(The value of the milk and milk products compared with the value of other foods will be shown in one of the tabulations further on.)

Thirty-two per cent of the population of the United States is engaged in agriculture. If the total population at present is 105,000,000, this means that 33,600,000 persons are on farms. It is estimated (by U. S. Census Bureau) that about one-third of these are on dairy farms, or about 11,000,000, and that 500,000 persons in addition are employed at shipping stations and in cities in the handling and distribution of milk and its products.

VALUE OF FARM PRODUCTS 1918.
(Annual Report, Secretary of Agriculture, 1918.)

Product	Value	Per Cent of Total
Corn	$4,563,668,680	18.4
Milk	2,360,120,000	9.5
Wheat	2,177,840,000	8.8
Pork	1,848,000,000	7.4
Oats	1,274,296,510	5.2
Beef	828,750,000	3.3
All other products	11,647,325,810	48.4
Total value all products	$24,700,000,000	100.0

One of the first effects of the war on the dairy industry was the demand of European countries for American dairy products. The products exported necessarily were required to be in their most imperishable form, and therefore consisted chiefly of cheese, butter, and condensed milk. From the U. S. Food Administration figures have been secured which show the number of pounds of milk

EXPORTS TO ALL ALLIES.
(Figures Expressed in Lbs.)

	1911–12	1912–13	1913–14	1914–15	1915–16	1916–17	1917–18
Cheese	3,823,855	638,001	550,608	50,562,232	38,080,351	55,404,366	42,603,336
Butter	1,451,995	60	721,520	3,336,565	6,325,098	20,959,016	15,898,511
Condensed milk	1,202,007	9,715	342	7,373,884	95,455,094	148,157,801	502,290,893

products exported from the years 1911 to 1918. These figures are shown in the table at the foot of page 260.

The Yearbook of the U. S. Department of Agriculture also publishes a statement of exports of dairy products, which while it does not correspond exactly to the statement of the Food Administration, yet shows approximately the same enormous increase in exports of condensed milk, cheese, and butter, during the years 1915, 1916, and 1917, as compared with the years previous to the war. These are shown in the following table:

EXPORTS OF UNITED STATES 1911 TO 1917.
(U. S. Dept. Agric. Year Books, 1913–1917.)

	1911	1912	1913	1914	1915	1916	1917
Butter	$1,059,432	$1,468,235	$872,804	....	$2,392,480	$3,590,105	$8,749,170
Cheese	1,288,279	898,035	441,186	....	8,463,174	7,430,098	15,244,364
Milk con'd	936,105	1,651,879	1,432,858	....	3,066,642	12,712,952	25,129,983
Other incl. cream	.....	244,913	474,055	....	343,583	524,426	283,467

Another effect of the war was the increase in the cost and selling prices of dairy products. This increase was shared by all other food products in varying degrees. A study of food prices shows much variation in the local markets of the country, but in every instance the prices for milk, while they have increased, have shown increases which are less than the increases in the prices of other food products. Among the many tabulations available for such comparisons may be selected the prices for some of the more important food staples in the New York City market for the month of November in the years 1914 and 1918 and the percentage of increase of each. These are indicated in the table of food prices increase.

FOOD PRICES INCREASE.
(New York Prices Current, Nov., 1914–Nov., 1918.)

Item	1914	1918	Per Cent Increase
Eggs	.23	.85	269
Corn	.72	1.72	139
Sugar	3.32	9.35	181
Beef	.18	.48	166
Cheese	.14	.46	128
Butter	.27	.77	226
Milk	.09	.17	88

In a report of the Bureau of Statistics of the U. S. Department of Labor the increase in retail prices of food from July 15, 1913, to July 15, 1918, expressed in percentages of increase are shown in the table below in this column.

In this tabulation 100 per cent is taken as the price for July 15, 1913. All amounts above 100 per cent indicate the increase up to July 15, 1918; thus lard increased 106 per cent, flour 103 per cent, corn meal 123 per cent. The increase in the price of milk was 48 per cent, while the increase in all articles combined was 67 per cent. This means that milk alone increased 19 per cent less than all other food articles combined.

RELATIVE RETAIL PRICES OF FOOD.

Article and Unit		July 15, 1913	July 15, 1917	July 15, 1918
Potatoes	lb.	110	246	229
Cornmeal	"	98	195	223
Lard	"	101	174	206
Flour	"	101	220	203
Bacon	"	104	159	194
Round steak	"	104	137	181
Ham	"	104	147	181
Pork chops	"	103	151	180
Hens	"	102	131	178
Bread	"	100	176	174
Rib roast	"	102	130	168
Sugar	"	100	166	167
Sirloin steak	"	104	129	166
Milk	quart	99	125	148
Eggs	dozen	87	122	142
Butter	lb.	91	120	137
All articles combined		100	146	167

The cost of producing milk is a matter of vital interest not only to the milk producer, but also to the milk distributor and milk consumer. The cost of production must be paid in order to keep the producer in business. The dealer and the consumer must keep the producer in business since he is the sole source of the milk supply. Numerous efforts have been made to determine the cost of milk production both by amateurs and by professional investigators. One has only to consider the enormous variations in every cost item entering into the list of milk production costs to recognize that as a matter of fact each dairy farm is a law unto itself. One has not to go far to discover dairy farms lying side by side, one of which is doing business at a profit, while the other is doing business at a loss. Not only does the character of the land itself, but the character of the cows and the business ability of the dairy farmer modify the items of cost. On the dairy farm the total volume of milk produced bears the same relation to the cost per quart that the total volume of business in other lines of industry bears to unit costs. Large producing cows produce milk at less cost than small producers. A large dairy herd produces milk at less cost than a small dairy herd. The purchase of supplies in large quantities reduces the unit of the same.

The best attempt that has been made to determine the cost of milk production is embodied in the work of agricultural colleges which have made studies of groups of representative dairy farms. The tabulation by the agricultural colleges of the cost items on the farms studied has furnished a basis for an estimate of the cost of producing milk on the kind of dairy farm which represents the average of farms producing milk for large city markets. From a considerable group of such studies conducted by the agricultural colleges of the states supplying milk to the City of New York, Prof. G. F. Warren of the State Agricultural College of New York at Cornell University has combined all statistics into a single formula representing the cost items entering into the production of 100 pounds of milk. The Warren formula is as follows:

COST ITEMS TO PRODUCE 100 LBS. OF MILK.

33.79 lbs. of grain
43.3 lbs. of hay
10.8 lbs. of other dry forage
92.2 lbs. of silage
8.3 lbs. of other succulent feed
3.02 hours of labor

In using the above formula, one pound of dry forage is considered equal to two-thirds of a pound of hay, making the hay and dry forage together equivalent to 50.50 pounds of hay. Other succulent feed is considered the equivalent of silage, so that the silage and succulent feed together are equal to 100.5 pounds of silage.

All of the cost items above mentioned are considered to amount to 79.7 per cent of the entire cost of milk production, the remaining 20.3 per cent being for bedding, pasture, use of buildings, cans, depreciation of cows, milk hauling, insurance, ice, salt, and numerous other miscellaneous expenses, minus deductions for the value of calves, manure, feed bags, etc.

Using the above formula, and applying the prices for the month of October, 1914, and the month of October, 1918, the cost of producing 100 pounds of milk in 1914 and 1918 is shown in the following tabulation:

COST OF PRODUCTION 100 LBS. MILK.
(Average Butterfat 3.8.)

Item	1914	1918
Grain	.513	1.0261
Hay and other dry forage	.3024	.4295
Silage	.2508	.4137
Labor	.6048	1.0087
Miscellaneous	.4177	.7192
Total	2.0888	3.5962
Per quart	.0454	.0782

In the above tabulation it appears that in 1914 the cost of producing 100 pounds

of milk was $2.08, while in 1918 it was $3.59, or .045 a quart in 1914 and .078 in 1918. This increase in the cost of production is one of the direct effects of the war through increases in the cost of feeds and labor.

There have been marked increases also in the cost of milk distribution during the war period. Machinery and all supplies have increased in price and there has been a large advance in wages. The bookkeeping of the distributing companies is not standardized, and consequently expenses are not kept under the same cost items. A survey of the expense accounts of large milk companies in New York City, made by the commissions which have investigated the same, showed that expenses can be grouped under a few general headings which are sufficient to indicate the principal costs and the increases during the war period. These items appear in the following tabulation:

COST OF MILK HANDLING AND DISTRIBUTION, NEW YORK CITY.

Item	1915	1918
Freight	.0093	.0120
Handling	.0120	.0260
Distribution	.0238	.0404
Administration	.0032	.0040
Total per quart	.0483	.0824

The above table shows the cost of handling and distribution in 1915 to have been .0483, and in 1918 .0824 per quart.

The New York Milk Conference Board, an organization consisting of dealers in milk and milk products in New York City and New York State, has compiled statistics for the war period showing the prices paid to the producer and charged to the consumer, and the difference, or so-called differential, being the money available for the use of the milk distributor. These figures are shown in the following tabulation:

PRICES PER QUART OF MILK, NEW YORK MARKET.

Date	Paid Producer	Charged Consumer	Differential
1915	3.66	9.0	5.34
1916	3.98	9.33	5.35
1917	5.82	11.96	6.14
1918	7.13	14.50	7.28

There is no subject of greater interest to students of milk economics than the differentials or spreads existing in different milk markets. For example, in Ottawa, Canada, the difference between the price paid to the milk producer and the price charged to the milk consumer is 3½ cents per quart. In Philadelphia the difference is 4½ cents per quart. In New York City it is 7½ cents, and in Boston 7¾ cents. In other cities in the south, middle west, and far west, the same remarkable variations can be found.

A comparison of prices paid to the producer will show that these prices do not vary nearly to the same extent that the prices charged to the consumer vary. It is impossible to avoid the conclusion that the great variation in these differentials must be due to local conditions affecting the cost of milk distribution, the chief of which is the volume of milk carried by the individual retail wagons.

In Ottawa and Philadelphia wagons carry from 450 to 500 quarts of milk each, while in New York City the average is less than 275 quarts. The character of the houses in some cities may make it easier for the milk driver to reach the family trade, so that certain physical advantages are given to the milk distributor, but in addition to this there is no question that centralization and consolidation of delivery systems and, in fact, of the entire milk delivery business would reduce delivery costs and other differentials to their lowest terms.

As an example of such economy, it is of interest to note the number of wagons

hauling milk in New York City. Of the total supply of about 2,000,000 quarts daily, about one-third is sold as bottled milk and delivered to households by retail wagons. The most recent figures available from the Department of Health are shown in the following tabulation:

COLLECTIVE HAULING, NEW YORK CITY.

Bottled milk (qts.)	704,318
Retail licenses	4,978
Loads if all wagons used (qts.)	142
Average New York load (qts.)	250
Full load (qts.)	428
Wagons in use	2,800
Wagons at full loads	1,640
Wholesale cans daily	22,400
Wholesale wagons licenses	1,522
Full loads (cans)	75
Wagons needed	300

From the above figures, New York City requires only a little more than one-half the retail wagons now in use, and while the number of wholesale wagons in use is not indicated, it seems probable from the number of licenses that a much larger reduction in the number of wholesale wagons would be possible.

The milk producer cannot escape criticism so long as an excessive number of farmers' wagons are used to haul milk to country shipping stations. A short survey of only eleven shipping stations made by the Mayor's Committee on Milk in 1917 showed the following conditions:

COLLECTIVE HAULING, COUNTRY.

Shipping stations	11
Farmers' wagons	453
Cans milk	1,181
Cans per wagon	3
Cans per wagon full load	30
Wagons needed	44
Saving in wagons	409

At the same rate, farmers' wagons for total New York supply would be 12,500. Wagons needed 1,250.

It is clear from the above figures that about ten times as many farmers' wagons were hauling milk to the eleven shipping stations observed as were necessary, and the cost of this labor and time is an unnecessary charge on the milk consumer. Consolidation of many other features affecting the cost of milk production can be brought about through better organization of the milk producing business.

New York City is the largest single market for foods in America. The quantity of food consumed by the city was tabulated by the New York Merchants' Association in 1913. This, while not as large as it should be to represent the present time, indicates in a general way the proportion of the different foods consumed.

Food Product	Quantity	Value	Percentage of Whole Value
Beef, and other meat products, lbs.	880,000,000	$413,600,000	34%
Milk, qts.	800,000,000	120,000,000	10
Butter, lbs.	139,000,000	111,200,000	9.2
Cheese, lbs.	28,956,009	14,478,004	1
Eggs, doz.	150,501,630	127,926,385	10
Bread, loaves	900,000,000	90,000,000	7.5
Sugar, lbs.	400,000,000	40,000,000	3.3
Poultry, lbs.	100,000,000	50,000,000	4.1
Potatoes, lbs.	750,000,000	30,000,000	2.5
Fish, lbs.	150,000,000	30,000,000	2.5
Coffee, lbs.	45,000,000	13,500,000	1
Tea, lbs.	5,000,000	3,000,000	.2
Cereals	.....	5,000,000	.4
Canned goods	.....	150,000,000	12.5
Total		1,195,704,389	

A study was made by Prof. Henry C. Sherman, Professor of Food Chemistry, Columbia University, New York City, of 92 representative families in New York City as to the quantity and value of foods consumed daily. This study lasted for a sufficient period to represent the average quantity of various foods consumed annually. The results of these studies appear in the following table:

DIET RECOMMENDED BY PROF. HENRY C. SHERMAN.

Food	Average Expenditures American Family	Expenditures Recommended
Meat—fish	35%	12%
Eggs	6	6
Milk	10	30
Cheese	1	3
Butter and other fats	9	11
Bread and cereals	15	13
Sugar	5	3
Vegetables, fruits	13	17

It is interesting to compare the percentage of value of foods used by the entire City of New York and of the value of foods used in the 92 representative

families studied by Professor Sherman. These comparisons are shown in the following table:

PERCENTAGE OF FOOD COSTS.

Item	New York	92 Representative New York Families
Meat	38%	32.7
Eggs	10	5.2
Milk	10	9.6
Cheese	1	.9
Butter	9.2	9.5

In a previous table showing the value of farm products in the year 1918 it appears that the value of the milk produced is 9.5 per cent of the total value of all farm products. This includes not only fluid milk, but also milk made into butter and cheese. In New York City as well as in the private families investigated the milk bill alone amounted to about 10 per cent, and butter and cheese together to another 10 per cent, making the total bill for dairy products about 20 per cent of the annual food bill. This increase is largely accounted for by the extremely high cost of marketing dairy products, which results in approximately doubling the price paid to the producer.

Professor Sherman, as a result of extensive studies of the requirements of the human body, recommends that the diet used by the average family in New York should be altered by a reduction of the meat bill from 35 per cent to 12 per cent, and an increase of the milk bill from 10 per cent to 30 per cent, with slight increases in the quantity of butter and cheese consumed. This means that the quantity of fluid milk used by the city should, in his opinion, be multiplied by 3 to provide a diet that would be most healthful and economical, while the meat bill should be divided by 3.

Prof. Graham Lusk, Professor of Chemistry in the Cornell University Medical College, in his testimony before the Mayor's Committee on Milk, says: "No family of five should buy meat until they have bought at least three quarts of milk. . . . Milk is the cheapest form of protein you can get. It is the most complete and sufficient food that can be had. Around the dairy farms centers the proper nutrition of a nation."

Dr. L. Emmett Holt, Professor of Diseases of Children in the College of Physicians and Surgeons, New York City, stated at the same hearing: "For infants during the first year a quart of milk a day is necessary. For the second year, a pint and a half. . . . For children between the ages of two and six years, the daily ration of milk should be one pint per day as a minimum. . . . I should think that after six years of age up to twelve or thirteen years, a pint of milk a day ought to be allowed to all children."

Prof. H. C. Sherman, testifying before the same committee, stated: "We cannot expect a good community dietary if that community uses less than one-half quart of milk per capita per day. . . . The milk has exceptional value as a food for growth, due to the so-called vitamines. . . . It is the most important single food for adults."

Prof. E. V. McCollum, Professor of Chemistry in the School of Hygiene and Public Health of Johns Hopkins University, has published the statement: "Peoples who have made liberal use of milk as food have attained greater size, greater longevity, and have been much more successful in rearing their young . . . and have achieved much greater advancement in literature, science, and art. . . . It has become evident that milk is the greatest factor of safety in our nutrition. . . . It is certain that we could not have accomplished what we have had we dispensed with milk as food. . . . There is no substitute for milk, and its

use should be distinctly increased instead of diminished, regardless of cost. . . . Milk is just as necessary in the diet of the adult as in that of the growing child."

At its meeting held in Chicago, December 8, 1918, the National Commission on Milk Standards appointed by the New York Milk Committee received reports concerning the prices paid for milk to the producer and prices charged to the consumer, the quantity of milk sold, and mortality statistics from Boston, New York, Philadelphia, Wilmington, Baltimore, Toronto, Indianapolis, Chicago, Jacksonville, and other cities, and passed the following resolution:

(1) That the price of milk to the consumer from 1914 to 1918 has in general increased from fifty to one hundred per cent.

(2) That while the quantity of milk consumed has fluctuated in the cities from which reports have been received, yet generally at the present time it is not less than the normal or usual supply.

(3) That there has been an improvement in infant mortality and a lessening in diarrhœal diseases under two years of age and that this improvement has not been checked by the advance in the price of milk between 1914 and 1918.

(4) That evidence presented to the Commission indicates the seriousness of under-nourishment or malnutrition among children of school age. The Commission believes that the cause of this is an improperly regulated diet, due to some extent to poverty, and to a larger extent to lack of appreciation of the value of milk as compared with other foods.

(5) That the proportionate increase in the price of other foods generally has been greater than the increase in the price of milk.

(6) That at present retail prices milk is the most economical animal food that can be purchased.

(7) The Commission recognized that the results of nutrition investigations during the past ten years have demonstrated that satisfactory nutrition is to be secured only through the employment of certain combinations of foods. It recognizes that milk, eggs and green leafy vegetables are so constituted as to correct, when taken in liberal amounts, the deficiencies from the dietary standpoint of cereal products, peas, beans, tubers, edible roots and meats. Since good nutrition cannot be secured on diets from which milk, eggs, and the leafy vegetables are absent, it is of the greatest importance that the use of these classes of foods should be extended.

It is further recognized that among these, milk is the most effective and most economical, and that milk is the one food for which there is no satisfactory substitute.

If the quantity of milk recommended by Professor Sherman, Professor Lusk, and Doctor Holt were used by the people of New York City, the results would be as follows:

Age	Population	Quarts of Milk Which Should Be Used a Day	
		Each	All
Under 1 year	130,500	1	130,500
1–2 years	126,700	(1½ pt.) ¾	95,025
2–6, 6–14 yrs.	1,387,900	(1 pt.) ½	693,950
Over 14 years	4,092,392	(1 glass) ¼	1,023,098
Total	5,737,492		1,942,573

Milk which New York City should drink—1,942,573 quarts daily.

Actual amount used for drinking is probably about 707,486 quarts daily.

If we compare the present milk supply of the United States with the milk supply that would be required under the recommendations of our leading food chemists, the increase in the size of our dairy herds that would be made necessary becomes apparent. This is shown in the following table:

Item	Pounds Milk Used at Present time	Quantity Recommended
Fluid milk	36,500,000,000	98,550,000,000
Butter	34,663,853,000	44,567,811,000
Cheese	4,200,000,000	8,400,000,000
Condensed milk	2,437,500,000	2,437,500,000
Ice cream	3,150,000,000	3,150,000,000
Calves	3,666,000,000	3,666,000,000
Total	84,611,350,000	160,770,811,000
Total dairy cows	23,284,000	44,204,000
Increase cows required	20,920,000	

This means an increase of over 20,000,000 dairy cows in the United States, or almost double the present number.

If the above figures are correct, at the

present time it is physically impossible for the people of the United States to obtain the quantity of milk for drinking purposes which is recommended by the food chemists. The number of dairy cows necessary to produce the same cannot be obtained for many years to come. The value of milk as a food and the growing demand justifies the dairy industry in looking forward to an enormous future development. To make this great food product available and to protect its sanitary character will require that state and municipal health officers have an intelligent understanding of economic conditions as well as of the safeguards necessary for the protection of the public health.

OPPORTUNITIES FOR CONTACT INFECTION.

G. T. Palmer,
Captain, Sanitary Corps, Washington, D. C.

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This diary of one day's potential contact infection opportunities ought to have its lesson for everyone, health officer or private citizen. It is a story that fits into every man's life and its moral, "Watch and Wash your hands," is an admirable health slogan.

An outstanding feature of the influenza pandemic is the remarkable infectivity of the disease. There is scarcely a community in this country that has escaped its visitation. Once introduced it has spread from person to person with truly amazing speed. This is partially accounted for by the very short incubation period, from two or four days. This furnishes new foci of infection at a much more rapid rate than is the case with certain other infectious diseases which require from five to twenty days to develop. So much for the progress of the disease, once rooted in the individual, but just how the infection is passed about so widely is a matter that is less easy to explain. Are the causative organisms transmitted from person to person by contact, or are they mixed with dust from saliva-laden streets and scattered broadcast by the wind? The trend of modern thought is to regard contact or hand to mouth transmission as by far the more important. It is only at such times as we have just experienced that there is a tendency to question the adequacy of this method. Dust holds out certain allurements because of its ubiquity and there is just enough of the mysterious associated with air-borne infection to be in keeping with a disease about which we know so little. Lest we wander too far from the truths which modern public health experience has taught us the following inventory of opportunities for contact transmission of disease is offered.

The writer recorded his chances of acquiring infections for an entire day. This list undoubtedly is typical for the average city dweller.

For the purpose of emphasis the items are recorded in detail:

1—Touched bathroom door knob.
2—Touched toilet seat.
3—Touched toilet flush handle.
4—Touched chain on light.
5—Touched faucet handle. (Washed hands.)
6—Touched bathroom doorknob.
7—Touched knob of outside door.
8—Received paper from newsboy.

9—Grasped handle of trolley car.
10—Received transfer from conductor. (Gloves on hands from this time till entering restaurant.)
11—Grasped back of chair in restaurant.
12—Touched tumbler with hand.
13—Touched tumbler with lips.
14—Touched teaspoon with hand.
15—Touched teaspoon with lips.
16—Touched plate with hand.
17—Touched second teaspoon with hand.
18—Touched second teaspoon with lips.
19—Touched coffee cup with hand.
20—Touched coffee cup with lips.
21—Touched cream pitcher with hand.
22—Touched cereal dish with hand.
23—Touched toast with hand.
24—Placed toast in mouth.
25—Touched shredded wheat with hand.
26—Placed shredded wheat in mouth.
27—Touched second piece of toast with hand.
28—Placed second piece of toast in mouth.
29—Used handkerchief to nose.
30—Handled napkin.
31—Wiped mouth with napkin.
32—Touched back of chair.
33—Received check.
34—Received change from cashier.
35—Opened door.
36—Closed door. (Put on gloves.)
37—Used handkerchief to nose.
38—Handled toilet room door at office.
39—Touched swinging doors on toilet.
40—Touched toilet seat.
41—Touched flush handle.
42—Touched swinging doors on toilet. (Washed hands.)
43—Touched toilet room door knob.
44—Used handkerchief to nose.
45—Shook hands with visitor.
46—Received paper from visitor.
47—Used handkerchief to nose.
48—Shook hands with visitor.
49—Shook hands with second visitor.
50—Opened toilet room door.
51—Pressed toilet flush with hand.
52—Turned water faucet. (Washed hands.)
53—Opened lunchroom door.
54-55-56-Received three dishes from attendant.
57—Handled chair.
58—Handled water tumbler.
59—Carried glass to lips.
60—Put spoon in mouth.
61—Put fork in mouth.
62—Opened post-office door.
63—Licked postage stamp handed out by clerk.
64—Opened post-office door.
65—Opened office door.
66—Placed hand on rail.
67—Opened office door.
68—Grasped handle on trolley car.
69—Opened door of bank.
70—Grasped pen used by public.
71—Received bills from cashier.
72—Opened bank door.
73—Opened toilet room door.
74—Closed swinging doors.
75—Touched flush handle.
76—Opened swinging doors.
77—Touched faucet. (Washed hands.)
78—Opened toilet room door.
79—Pressed handle on drinking fountain with hand.
80—Handled toilet room door.
81—Pressed toilet flush.
82—Turned faucet handle. (Washed hands.)
83—Opened toilet room door.
84—Received newspaper.
85—Received change from newsboy.
86—Grasped car handle.
87—Received change from conductor. (Put on gloves.)
88—Opened restaurant door.
89—Handled chair.
90, 91, 92, 93—Handled knife, fork, spoon, tumbler,
94, 95, 96—Touched spoon, fork and tumbler to mouth.
97—Handled water pitcher.
98—Touched napkin.
99—Wiped mouth with napkin.
100—Grasped chair.
101—Used handkerchief to nose.
102—Handled cake.
103—Put cake in mouth.
104—Grasped chair.
105—Opened door.
106—Used handkerchief to nose.
107—Used toothpick, bringing hand to mouth.
108—Opened door to house.
109—Received paper from friend.
110—Friend laughed boisterously within spray range.
111—Used handkerchief to nose.
112—Closed bathroom door.
113—Pressed toilet flush.
114—Turned faucet handle. (Washed hands.)
115—Opened bathroom door.
116-117—Shook hands with two people.
118—Touched light chain.
119—Passed candy to mouth with hands.

The above list shows 119 possibilities during the course of a day for acquiring

infected material either on the hands, mouth or nose. We may sum up these incidents as follows:

Touching hands to articles that were or might have been touched by others immediately before..87
Shaking hands.....5
Carrying to mouth articles possibly infected by others.....17
Hand brought in contact with mouth directly.....2
Hand brought in contact with nose indirectly through handkerchief.....7
Chances of acquiring infection through laughing of others.....1
Chances of acquiring infection through sneezing of others.....0
Chances of acquiring infection through coughing of others.....0
Chances of acquiring infection through kissing...0

There were 92 opportunities for infecting the hands directly with other hands or with articles just handled by others. Mere infection of the hands is, of course, immaterial. It is the carrying of the infected hand to the mouth or nose, which constitutes the danger. In the present instance the hand was brought in contact with the mouth or nose, either directly or through food, or through handling a handkerchief 14 times, 7 times in the case of the mouth and 7 in the case of the nose. This represents the experience of one to whom keeping hands out of the mouth is second nature. But what of the person who is unconscious of the hand to mouth habit? There is no question but that the hand travels to the mouth much more frequently with the average individual.

There were seven opportunities of infecting the nose with the hand through the medium of the handkerchief. The influence of weather and climate on infection is suggested here by the fact that the colder or more changeable the weather the more frequently does the nose require attention and the opportunities for infecting the nose from the hand increase in proportion.

In making up this record of articles touched by the hands, it should be emphasized that only those instances have been recorded which offered the possibility of infection through recent handling of the article by others. Contacts with papers, pencils, etc., handled remotely by others have not been included.

Another point that stands forth is that our hands are dangerous to others only in proportion to the frequency with which we infect them with our mouth and nose. The present experience shows seven hand to nose contacts and but two direct hand to mouth contacts. The handkerchief thus looms up as a factor of importance. Through it we may infect our hands from our nose, which is dangerous to others, and also infect our nose with our hands which is dangerous to ourselves.

Several lessons of practical value suggest themselves from the above related experiences. They are:

I. That we should use handkerchiefs one side of which is conspicuously colored or marked so that we may always apply the hands to one side reserving the other side for the nose. This will protect our own nose from our hands and help to prevent the infection of our hands.

II. That we should abandon the universal practice of shaking hands, substituting some other less intimate method of salutation.

III. That we should encourage means which will lessen the opportunity for public restaurant employees to handle eating utensils.

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Lots of people say the Journal improves month by month. Bring the Membership up to 5,000 and watch what happens.

INCOME AND INFANT MORTALITY

Miss Julia C. Lathrop,
Chief of Children's Bureau, Washington, D. C.

Read before Sociological Section, American Public Health Association at Chicago, Ill., December 9, 1918.

Miss Lathrop, who is a leader in the country-wide movement to save the babies, tells us in this article how an insufficient wage, a mother who is obliged to labor, and a community that is careless about its housing, constitute three very important factors to the infant mortality.

THIS paper attempts no more than to indicate from facts gathered in the United States the immediate practical bearing of the subject upon the great interest of this association. It refers chiefly to the material secured by the infant mortality inquiry of the Children's Bureau and I shall quote from the series of reports prepared by members of the Bureau staff, mentioning only a few outstanding coincidences between varying incomes and varying infant mortality rates as shown with marked uniformity in the studies.

Infant mortality is the first subject mentioned in the law creating the Children's Bureau which directs it to investigate and report upon all matters pertaining to the welfare of the children, and it was the first subject of field study undertaken when the Bureau went into operation in 1912. For the last six years, a series of studies of infant mortality has been carried on. To this writing, intensive field studies have been made, with a substantially identical schedule, in eight cities, ranging in population from about 50,000 to more than half a million inhabitants, and differing widely in characteristics. They include a "steel city," Johnstown, Pa.; two textile cities, Manchester, N. H., and New Bedford, Mass.; Brockton, Mass., a center for the manufacture of high-grade shoes; Saginaw, Mich., a manufacturing city with no one predominating industry; Waterbury, Conn., chiefly given over to the manufacture of brass; Akron, Ohio, a rubber manufacturing center, and Baltimore, Md., a large cosmopolitan city. In addition, rural studies of maternal and infant welfare have been made, with especial reference to showing the amount and quality of care obtainable for mothers and babies in the remoter and newer country areas.

None of the studies made by the Bureau attempt to approach infant mortality as a medical question; they merely set down the co-existence of certain conditions of life with varying infant mortality rates. They are concerned with the economic, social, civic, and family conditions surrounding young babies. So far as the Bureau was aware, the method employed was new. Instead of basing the inquiry on the children who died, the criterion was really the children born in a given calendar year. The surroundings of each child were traced through his first year of life, or such shorter period as he survived, by women agents of the Bureau who called upon each mother and obtained the information through direct personal interviews.

For obvious reasons, only the urban studies undertake to state income in terms of cash receipts, and it is with these studies we are now concerned.

Although in each city studied the

earnings of the mother and other income facts were secured, the earnings of the father were selected as the standard of income, not only because in most cases such earnings constitute the family income, but because of the conviction that the earnings of a man should be sufficient to support his wife and young children in safe comfort. Great pains were taken to make the income figures as accurate as possible. While it was plainly necessary to accept the mother's statement with reference to matters directly pertaining to the daily life of the baby, it was thought that she might not always know about her husband's earnings and that other sources of information might be more important. Hence, in one of the earliest studies a test was made of the accuracy of the mother's answers to the income questions by comparing them with facts about the father's earnings collected from as many sources as possible; payrolls were consulted and employers and the fathers themselves were interviewed. A comparison of the results of this test with the mothers' answers was fully satisfying as to the substantial accuracy of their statements, and they have been accepted for all the studies made.

All of the studies included in this discussion were made before the United States entered the war; so the figures given cannot be taken to represent wages or prices as affected by war conditions. During the past year a study has been in progress in Gary, Indiana, a war industries town. The findings of this study have not yet been analyzed.

The infant mortality rates have been tabulated in each city in connection with the earnings of the fathers up to a maximum of $1,250. Beyond this sum it became difficult to secure the facts. Except in the largest city studied, moreover, the number of instances of higher income was so small that they could not be divided into groups representing enough cases upon which to base percentages. Data were secured about the fathers of 23,780 babies, including stillborn children. More than one-fourth (26.9 per cent) of these fathers earned less than $550 during the year following the baby's birth. Only one in eight (11.9 per cent) earned as much as $1,250.

City	Total Births	Father's Earnings			
		Under $550		$1250 and Over	
		Number	Per Cent of Total	Number	Per Cent of Total
All cities	23,780	6,404	26.9	2,839	11.9
Johnstown, Pa.	1,499	243	16.2	524	35.0*
Manchester, N. H.	1,643	499	30.4	105	6.4
Brockton, Mass.	1,247	156	12.5	137	11.0
Saginaw, Mich.	1,015	182	17.9	143	14.1
New Bedford, Mass.	2,662	1,004	37.7	173	6.5
Waterbury, Conn.	2,197	808	36.8	192	8.7
Akron, Ohio	2,322	374	16.1	307	13.2
Baltimore, Md.	11,195	3,138	28.0	1,258	11.2

*In the study of Johnstown many incomes were returned as "ample," and such incomes have been included in the $1,250 and over group in this table with a result that the proportion of such incomes is perhaps exaggerated.

In general the lowest income groups are the highest infant mortality groups in all of the cities studied.

INFANT MORTALITY RATES BY FATHER'S EARNINGS.

City	Deaths of Infants Under One Year of Age Per 1,000 Live Births, by Specified Annual Earnings of Father		
	All Earnings	$1250 and Over	Under $550
All cities	111.2	64.3	151.4
Johnstown	130.7	87.6	260.9
Manchester	165.0	58.3	204.2
Brockton	96.7	73.5	67.1*
Saginaw	84.6	22.2	142.0
New Bedford	130.3	59.9	168.7
Waterbury	122.7	68.4	151.1
Akron	85.7	40.0	117.5
Baltimore	103.5	64.7	138.0

*Contrary to the findings for other cities, the mortality rates for the earnings groups under $550 and $550 to $849 were considerably lower than for the group $650 to $849. Two explanations for this peculiar showing may be advanced: First, the groups are comparatively small, having but ten deaths in each class, and consequently they may have been considerably influenced by exceptionally favorable conditions in the year selected; second, the earnings as reported in the lowest earnings group do not always reflect the family's standard of living.

It is impossible to state a normal infant mortality rate. Perhaps the best statement, because the most stimulating to

continuous effort, is that of the authority who has said that if all children were well born and well cared for the infant mortality rate would be negligible. Emphasis upon being well born is justified by the fact that in the birth registration area of the United States more than 46 per cent of the infant deaths occur during the first month of life. Many of these children fail to survive because of conditions antedating birth.

It may well be noted here that while the figures of the Bureau's studies and of other investigations clearly indicate the coincidence of the mother's exhausting toil and poor living conditions with the inability of the child to survive the first month of life, there is included within this 46 per cent a field which calls for the concentrated effort and study of physicians, social students and biologists.

The contrast between the most favorable and the least favorable rates in the cities studied indicates the favoring result of income which permits proper housing, proper surroundings and care, and which connotes a fair degree of education.

Income is important for what it buys. Its adequacy may be tested, for example, by housing. A comparison of rent paid with infant mortality rates in Manchester, N. H., shows the general tendency of infant mortality rates to fall as housing conditions improve. According to the report of the Children's Bureau on infant mortality in that city, there were 175 homes of live-born babies where the rental paid was less than $7.50 per month and the infant mortality rate among babies in these homes was 211.4 or more than double the census figure for the registration area in 1915 of 100 per 1,000 living births. The largest number of babies, 703, was found in homes where the rent paid was from $7.50 up to $12.49. The rate for this group was 172.1. There were 300 babies in the next class, where the rentals were from $12.50 to $17.49, and the infant mortality rate among them was 156.7. Only 62 babies belonged to homes with a rental of $17.50 and over, and six deaths occurred among them. Here the rate was about 1 in 10 or the equivalent of the census figure for 1915. The parents of 186 babies owned their homes, and the infant death-rate was still lower, 86 per 1,000. The Johnstown Report says: "In homes of 496 live-born babies where bathtubs were found, the infant mortality rate was 72.6, while it was more than double, or 164.8 where there were no bathtubs. . . . In a city of Johnstown's housing standards, the tub is an index of a good home, a suitable house from a sanitary standpoint, a fairly comfortable income, and all the favorable conditions that go with such an income."

Income plays a chief part in determining the location of the home as well as the kind of home. The report for Waterbury, Conn., shows that the infant mortality rate for children born in houses located on the street was 120.6, while that for children born in houses placed on the rear of a lot or on an alley was 172.0.

Overcrowding is another housing condition that accompanies low income. The report on Manchester, N. H., says: "The infant mortality rate showed a steady increase according to the number of persons per room. It was 123.3, where the average was less than one; 177.8 where the average was one but under two; and 261.7 where the average was two but less than three." It is significant that in Brockton, where wages, taken by and large were better than in any other city studied, and where the infant mortality rate was markedly low, there is no acute housing problem. Yet in Brockton, as in the other cities, the infant mortality rate was highest in the most crowded homes.

In houses where there was less than one person to a room, infant deaths occurred at a rate of 86.5 per thousand births; where there was more than one person to a room, that rate rose to 110.2. Only 32 out of 1,210 Brockton babies were born into homes where there were more than two persons to a room. There is available much foreign material which confirms the impression conveyed by the Children's Bureau studies of the fundamental importance of decent sanitary housing.

A woman, who was the mother of six children and whose husband earned $2 a day, after reading certain of the Children's Bureau bulletins on the care of children wrote to the Bureau: "I like the Bulletins. Some of the things I knew before, some of them my neighbors have told me, but there are things you can't do when 8 people must live in two rooms."

Another test of the adequacy of income is the employment of the mother. The Johnstown report says: "It is impossible to judge from statistics alone whether or not the work done by an individual woman, either her own housework or work for money is so excessive as to affect her during pregnancy or while nursing to the extent of reacting on the health of the baby, but the fact is that the infant mortality rate is higher among the babies of wage-earning mothers than among the others, being 188, as compared with a rate of 117.6 among the babies of non-wage-earning mothers. Wage-earning mothers and low-wage fathers are in practically the same groups, and it is difficult to secure an exact measurement of the comparative weight of the two factors in the production of a high infant mortality rate." In Johnstown, no woman-employing industries were found, but many of the poorest foreign mothers kept lodgers and boarders, the percentage of mothers contributing to the family income varying from 47.6 per cent in the lowest wage group to 2.0 per cent in families where the father earned $1,200 or more. In the case of this type of working mothers, although there is severe toil, the baby profits because there is not the necessity for artificial feeding which exists when the mother is away from the child during working hours. In Manchester, N. H., where there is a great demand for women workers in the textile trades, 679 mothers of babies were employed during the year following their baby's birth, 353 in the home, 326 outside, and 885 were not employed. While the rate for the babies of mothers at home and with no employment save that of caring for their households was 122.0, that for mothers employed outside the home was 312.9.

That mothers apparently do not choose to go out to work leaving young babies at home is shown by the lessening proportion of mothers employed as the husband's wages increase. In Manchester, 65.7 per cent of the mothers whose husbands earned less than $550 were gainfully employed during the year following the baby's birth, while only 9.5 per cent of the mothers whose husbands earned more than $1,250 were so employed. When it is realized that the infant mortality rate greatly increases when the mothers go out leaving young babies at home and that the number of mothers so employed rapidly decreases as the father's wages increase, the connection between income and infant mortality becomes more impressive than if viewed from any other approach.

Poverty may be accompanied by ignorance. Although it is not possible to gauge the relative ignorance of the care of children according to income, it is clear that poverty takes away the defenses by which the effects of ignorance may be evaded. Sir Arthur Newsholme, Medical Officer of the English Local Government Board, offers a spirited defense of the

working-class mother in this connection. He says:

"Maternal ignorance is sometimes regarded as a chief factor in the causation of excessive child mortality. It is a comfortable doctrine for the well-to-do person to adopt; and it goes far to relieve his conscience in the contemplation of excessive suffering and mortality among the poor. . . . There is little reason to believe that the average ignorance in matters of health of the working-class mother is much greater than that of mothers in other classes of society. . . . But the ignorance of the working-class mother is dangerous, because it is associated with relative social helplessness. To remedy this, what is needed is that the environment of the infant of the poor should be levelled up toward that of the infant of the well-to-do, and that medical advice and nursing assistance should be made available for the poor as promptly as it is for persons of higher social status."

Among the essentials of a lowered infant mortality rate are:

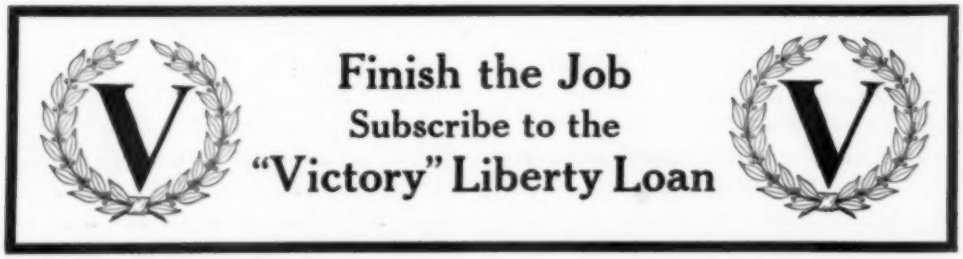
1. Medical and nursing care at the service of all mothers and infants in this country, a policy which has been discussed in the Fifth Annual Report of the Children's Bureau with reference to foreign experience and the setting forth of a plan for rural provision in the United States.

2. Adequate teaching in the normal hygiene of maternity and infancy made available for all girls and women.

3. Community responsibility for decent housing and sanitation.

But finally, and fundamentally, a general recognition throughout the country that a decent income, self-respectingly earned by the father is the beginning of wisdom, the only fair division of labor between the father and the mother of young children, and the strongest safeguard against a high infant mortality rate.

We still cling to the shaken but not shattered belief that this free country gives every man his chance and that an income sufficient to bring up a family decently is attainable by all honest people who are not hopelessly stupid, or incorrigibly lazy. The fathers of 88 per cent of the babies included in the Bureau's studies earned less than $1,250 a year; 27 per cent earned less than $550. As the income doubled the mortality rate was more than halved. Which is the more safe and sane conclusion! That 88 per cent of all these fathers were incorrigibly indolent or below normal mentally, or that sound public economy demands an irreducible minimum living standard to be sustained by a minimum wage and such other expedients as may be developed in a determined effort to give every child a fair chance?



A PLAN FOR A MORE EFFECTIVE FEDERAL AND STATE HEALTH ADMINISTRATION.*

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(*Concluded.*)

Read before General Sessions, American Public Health Association, at Chicago, Ill,. December 10, 1918.

The service, however, should be limited to serious cases, defined in the light of a rational understanding of public requirements, and no effort should be made to serve the large number of patients suffering from minor ailments, to the disadvantage of those in serious danger and most urgently in need of the proper medical or surgical skill, amplified, if required, by even prolonged nursing, attendance, medicines, appliances, etc. However difficult the solution of this question may be, it represents a decidedly preferable form of organization to the extremely costly, burdensome, and undemocratic method of compulsory health insurance typical of German autocracy and involving a disregard of the personal rights and liberties of a true democracy.

The foregoing three principles, (1) the physical and medical examination of at least children and young persons to their majority; (2) the accurate and complete registration of at least all serious illnesses considered as a community problem; and (3) the establishment of a limited state medical service; do not precede but merely logically follow or amplify the existing form of public health organization. There will never come a time when the police powers, as indicated at the outset, will not take precedence in dealing with communicable or quarantinable diseases, public sanitary necessities and public nuisances over any other matter not immediately concerning the health and welfare of the people. But there can be no permanent improvement in health administration until the foregoing three principles, however much modified in matters of detail, or enlarged in directions not indicated at the present time, are vigorously applied and made a condition precedent to whatever form of public health reorganization may be ultimately decided upon for the federal government as well as for the several states.

It would unduly enlarge this discussion if all the details† of such a required reor-

* The first part of Dr. Hoffman's paper appeared in the March issue of the JOURNAL.

† Among the more important contributions to the subject of health administration reorganization are the following: A Discussion on the Coördination of the Public Medical Services, by Dr. (now Sir) Arthur Newsholme, contributed to the Proceedings of the British Medical Association, 1907; The Economic Advisability of Inaugurating a National Organization of Health, by J. Pease Norton, read before the American Association for the Advancement of Science, 1906; Proposed Plan for an Institute of Public Health and Preventive Medicine, Confidential Publication, Columbia University, April 26, 1909; Argument for the Establishment of a National Department of Public Health, by U. S. Senator Robert L. Owen, U. S. Senate, March 24, 1910; Memorial in Behalf of the American Medical Association in Reference to Senate Bill 6049, Establishing a Department of Public Health and for Other Purposes, April 26, 1910; The Present Organization and Work for the Protection of Health in the United States, by Walter Wyman, M. D., Surgeon-General U. S. Public Health and Marine Hospital Service, read before the American Public Health Association, 1910; Letter from the Secretary of the Treasury, transmitting, in response to Senate Resolution of January 16, 1913, information relative to the expense for the year 1912 of the Public Health and Medical Service, February 12, 1913; Paper on the School for Health Officers of Harvard University and the Massachusetts Institute of Technology, by Milton J. Rosenau, Bulletin of Massachusetts State Board of Health, September, 1913; Address on the Training and Status of Public Health Officers in the United Kingdom, by George H. F. Nutall, M. D., Transactions Fifteenth International Congress of Hygiene and Demography, 1912; The Full-Time Health Officer; An Address by Louis I. Dublin, Ph. D., State Conference of Health Officers of Kentucky, 1913; Coöperative Public Health Administration, by Prof. Earl B. Phelps, U. S. Public Health Service, September 25, 1914; Coöperation and Coördination of Voluntary Public Health Organizations, by Frederick R. Green, M. D., American Public Health Association, 1914; Report on the Present Condition of Public Health Organizations in the United States, by Prof. S. M. Gunn, American Medical Association, 1915; A Survey of the Activities of Municipal Health Departments in the United States, by Frank Schneider, Russell Sage Foundation, 1916; Will the Private Practitioner Determine the Future of Public Health Work, Address by Haven Emerson, M. D., New York, 1916.

ganization of our public health services were presented on this occasion, even in the broadest outlines compatible with the vital importance of the subject. It has therefore seemed best to merely sketch the following plan of subdivisions of health functions as a tentative program suitable for discussion and rearrangement or amplification in matters of detail:

Proposed Plan of Federal Health Administration.

(Note—The term "U. S. Health Administration" seems in every way preferable to the term "U. S. Public Health Service" as at present in use. The functions already rendered, and to be rendered, are distinctly administrative, rather than in the nature of mere governmental services, possibly misconceived as a matter of useful convenience though of paramount necessity. The public has become familiar with the terms "Food Administrator," "Fuel Administrator," etc., and it would seem best, in any future health reorganization, to adopt such a term as is here suggested rather than to continue the obsolete and quite insufficiently descriptive one of "Surgeon General.")

The proposed health administration, therefore, would seem to group itself naturally and more or less in the order of their importance or logical interdependence into three main divisions, each of which should be in charge of an assistant Federal health administrator, as follows:

Division A—General Public Health and Quarantine.

Section
1 Health organization and administration.
2 Health laws and ordinances.
3 States Relations Service.
4 International and maritime quarantine.
5 Communicable and transmissible diseases.
6 Urban sanitation, town planning, and housing.
7 Rural sanitation.
8 Sanitary engineering and drainage.
9 Tropical medicine and sanitation.
10 Hygienic laboratory.
11 General scientific research.

Division B—Medical Practice and Physical Welfare.

Section
12 Medical practice, pharmacy, and dentistry.
13 Physical anthropology.
14 Child hygiene.
15 School hygiene.
16 Personal hygiene.
17 Industrial hygiene.
18 Mental hygiene.
19 Social hygiene.
20 Hospitals and institutions.
21 Race pathology.

Division C—Statistics and Information.

Section
22 Mortality statistics.
23 Morbidity statistics.
24 Health education, health propaganda, and publications.
25 Associated activities and health-promoting agencies.
26 Higher education in Public Health Administration.

In the foregoing outline no provision is made for special divisions or departments concerning diseases of exceptional importance, such, for illustration, as tuberculosis or malaria. Investigations or activities concerning these and other important diseases, such as pellagra, poliomyelitis, trachoma, etc., are now carried on by the public health service through the Department of Scientific Research. It may well be a question, however, whether these diseases should be made primarily a matter of research or of exclusive concern as to their more involved scientific aspects, or whether they should be conceived as administrative problems requiring action on the basis of a well considered Federal policy coördinated or correlated to state and local activities in the same direction. It would perhaps be better to make the functions of a research department more restricted and to broaden the field of administrative activity. In whatever direction such a broadening process might be deemed advisable, this would be readily feasible through the section Health Organization and Administration, or under one or more of the other subdivisions, such as urban sanitation, rural sanitation, etc.

The States Relations Service section rests upon the conception that the time is near when the Federal government should provide its share of funds in the furtherance of the working out of a rational public health policy for every section and subsection of the United States. The constitutional difficulties of such coördination seem to have been successfully overcome in the States Relations Service of the Department of Agriculture, and the expansion of the same principle in interstate highway construction, etc. It would seem entirely sound that the share of the nation in the general sanitary administration of the country should be one-third of the total cost, provided standardized requirements of service are demanded of the local authorities, upon whom would fall the burden of providing the other two-thirds of the cost, which again might be divided between the state (assuming one-third) and the county or municipality (assuming the other third). It is only upon some such principle as this that a perfect working plan of coöperation and coördination is ever likely to be developed. Unless the Federal government has a direct financial interest in local plans and purposes of sanitary administration there can never be a truly national health interest, sustained by a rational national policy of public welfare.

The section on communicable and transmissible diseases logically follows the section on international and maritime quarantine. Now that practically all the state quarantine stations have been transferred to the Federal government the effectiveness of Federal quarantine laws, rules and regulations have been very materially increased. Whether it would be wise to include in this section the medical inspection of immigrants is open to question; possibly a subsection might be created, to be known as "Immigration Service," for in many cases quarantine administration and immigration inspection are carried on by Federal officers within the same or adjoining premises, and possibly by the same medical officer. Since the primary purpose of all quarantine is to control the spread of communicable diseases, it would seem best that, in the logical order of arrangement, the latter should follow the former, even though much, if not most, of the work in connection therewith on the part of the Federal government would, unless present methods are materially changed, consist of epidemiological research and emergency work.

The work of the Hygienic Laboratory at the present time is subdivided into four divisions, respectively (a) pathology and bacteriology, (b) pharmacology, (c) zoölogy, and (d) chemistry. The question might be raised whether the laboratory should not concern itself more extensively with problems of medical entomology regardless of the fact that already much admirable work in this field is being done by the Bureau of Entomology of the Department of Agriculture. A certain amount of duplication of effort is absolutely unavoidable. To carry on malaria research, for illustration, without the closet possible coöperation of a well-organized department of medical entomology is practically impossible. As is generally understood, the main purposes of the Bureau of Entomology of the Department of Agriculture are economic, and such research work, for illustration, in connection with malaria and mosquitoes as has been carried on by the bureau has been primarily, if not exclusively, of an economic nature, emphasizing the relation of malaria frequency to variations in crop production, etc.

The question may also be raised as to whether the Hygienic Laboratory should not give more consideration to autopsy records, which, at the present time, if collected at all in local and state hospitals,

are generally deficient in matters of important details in that the objective findings are not clearly stated, or that the anatomical diagnosis is not concisely set forth in a manner suitable for future collective investigations. There is the utmost urgency for increasing the number of autopsies, especially in public institutions, and efforts in this direction, sustained by a Federal health administration, would prove unquestionably more successful than is the case at the present time.

The section on medical practice, pharmacy and dentistry will probably be the one to which most serious objections will be raised on practical grounds. The time is bound to come, however, when this problem will have to be met and when uniformity in medical practice and interstate rights and privileges will have to be granted to graduates of recognized institutions passing examinations in conformity to Federal requirements. How far this section would ultimately encroach upon collateral branches of medicine and surgery, such as osteopathy, chiropractique, etc., may well be left to the future. In any event, even if at the outset entirely without power to establish standard requirements of medical practice, such a section would serve the extremely useful purpose of collecting information and of assisting in the solution of interstate medical problems which are now a matter of serious concern in many sections of the country. Such a section would also be in an admirable position to best utilize the large amount of information collected by the Medical Section of the Council of National Defense and to keep such information down to date, for possible future military or other requirements. How far this section should include the nursing profession, both public and private, may for the time being, be left undecided.

The section on physical anthropology should be in charge of a thoroughly qualified expert, whose main function at the outset would be to collect in a systematic manner the vast amount of existing anthropometric material. Assistance should be rendered in the preparation of uniform or standard blanks, and the perfection of standard tables of physical proportions, all of which are at present more or less inadequate for practical purposes. There should be active coöperation, of course, on the one hand with the Children's Bureau, and on the other chiefly with educational authorities, Young Men's Christian Associations, etc.

The section on industrial hygiene, of the U. S. Public Health Service, has heretofore concerned itself chiefly with limited inquiries into highly specialized phases of the occupational disease problem in cooperation with the Bureau of Mines, the Bureau of Labor Statistics, etc. In view of the fact that the recently established section on Labor Conditions Service of the Department of Labor, contemplates a thoroughly well developed division of industrial hygiene, in charge of a former specialist of the U. S. Bureau of the Public Health Service, the future functions of a reorganized Federal health service in this field would probably be still more circumscribed. That, however, might be a material advantage in that the scientific research work to be undertaken or the cooperation required in highly specialized fields of inquiry, would be concentrated upon the more subtle and difficult problems rarely permitting of being adequately dealt with under a broader and more immediately practical division of work.

The suggested section on race pathology touches a field which has heretofore received decidedly inadequate consideration. Aside from the obvious necessity that more scientific attention should be given to the problem of negro mortal-

ity in the Southern states, affecting a population of more than ten millions, economically of the utmost importance to the southern agricultural and industrial interests, the more restricted fields of inquiry into the disease peculiarities of our native Indians, of the Orientals and Mexicans residing within our borders, of the numerous races, pure and mixed, in the Hawaiian Islands, and of the natives of Porto Rico, the Virgin Islands, etc., all suggest the necessity for a separate division of work, in charge of a thoroughly trained expert, whose work should be coördinated, as far as practicable, to the corresponding efforts of the Committee on Race in Relation to Disease of the National Research Council.

The statistics of hospitals and institutions are most urgently in need of being standardized. There is such a large variety of blanks and forms, and a most unfortunate blind conformity to antiquated methods no longer applicable to modern requirements, that drastic reforms are called for. Institutional morbidity statistics are of a high order of intrinsic value and practically useful in connection with a variety of medical, social and economic problems. The work of this section should be intelligently coördinated to the corresponding efforts of the College of Surgeons, the American Public Health Association, the American Hospital Association, etc.

The section on mortality statistics is not intended to include the work of the Division of Vital Statistics of the Census Office. It may safely be assumed as a foregone conclusion that the most serious objections would be raised against separating the Division of Vital Statistics from the Division of Population Statistics of the Census, both of which are closely interrelated in the primary object of disclosing the population and mortality tendencies of the nation, not only at different censal periods but during intercensal years as well. There are, however, other practical objections, among which perhaps the most important is the valid reason that the mortality data of the nation are, after all, the only true index of health progress in certain well defined directions, and that the control of the evidence relating to such progress should not be intradepartmental but extradepartmental, in so far as that can possibly be arranged for. No one has ever raised convincing objections against the office of the Registrar-General of England and Wales not being directly connected with the department of the Medical Officer of the Local Government Board, and while suggestions have been made for the transfer of this department to the proposed "Ministry of Health," the situation in England is, after all, essentially different from what it is in this country. The registration of diseases is quite another matter, since the morbidity is a much more correct current index of health and well-being than the mortality, even from strictly communicable or transmissible diseases. It may be said in this connection, however, that unless the existing methods of weekly abstracts of sanitary reports are materially perfected and improved in important details it would seem best to discontinue their publication entirely.

The question then arises as to how far such a plan as is here suggested, subject to change in matters of detail, would be applicable to state requirements. In view of the wide variations in state health purposes certain modifications no doubt would be necessary,—in some directions possibly an enlargement of the function suggested and in others a very material abridgment. In the main, however, the general plan and scope of the proposed organization should be found feasible of adoption by the several states and, of course, subject to further modifications,

by the larger municipalities. The status of any Federal health organization will probably always remain chiefly advisory and corrective. This conclusion, of course, does not apply to international and maritime quarantines, or to the hygienic laboratory, or to research work. The real health *administration*, in conformity to our constitutional limitations, must, after all, remain, and properly so, a state or local function. By way of illustration, a very brief reference may be made to the state organization of California. While apparently the budget is fairly liberal, it is entirely inadequate to the purpose, considering the vast area of the state and the wide variations in local conditions and special needs. In the Sacramento Valley, malaria is a problem of the first importance, in southern California it is the indigent tuberculous patient, in the Mother Lode region it is miners' hookworm disease and possibly miners' phthisis, while in the city of San Francisco it is, in a rather restricted sense, of course, the problem of Oriental mortality, tropical diseases, leprosy, etc. The state health organization rests upon a district system, which provides entirely inadequate financial resources, under a single health officer, for an area which may be larger than the combined territory of several New England states. Under the old conception of emergency service during epidemics, or sanitary after-care, the present method is probably as satisfactory as any. Under the proposed plan, however, the state would thoroughly reorganize itself and establish a health policy paramount to every financial, commercial or even sentimental consideration. The effective organization of all the health-promoting agencies in the state of California, in coördination to a well-equipped state health administration would prove productive of far-reaching results. Yet, regardless of vast expenditures for a multitude of purposes, the state has at present neither as effective a health organization as is required, nor is there a well defined movement in the direction of the required reforms.

The state of New Mexico may serve as another illustration. At the present time it may safely be asserted that the state is not only without a state health organization, but not one of the principal cities or larger communities has a thoroughly satisfactory local health board. The registration of deaths is not enforced. The people of the state of New Mexico are of right entitled to a progressive health policy. The health of this state is not merely a matter of local but of national concern as well, as best illustrated during the recent epidemic of influenza on the one hand, and the problem of the interstate migration of tuberculous invalids on the other. There are numerous special problems, such as the effect of altitude on health and its relation to the treatment of certain diseases, the proper and more effective use of medicinal springs, the morbidity and mortality of the Indian population, the special sanitary problems of the Mexican element, etc. None of these are receiving proper consideration at the present time. The state cannot possibly hope to attract new residents proportionately to the practically unlimited opportunities for further economic development unless evidence is forthcoming of a well considered state policy of a health administration more or less in conformity to the outline presented on the present occasion. The efforts which have been made by the New Mexico Public Health Association are deserving of the most liberal encouragement on the part of both the state authorities and the public at large.

This conclusion, however, does not apply with the same force to international morbidity statistics, where imperfections

are more excusable. To publish statistics for one week and not for another, and to leave gaps which frequently afterwards cannot be bridged, is to impair materially the true value of the returns under consideration so that if they cannot be improved they had better be done away with. Attention, however, may be directed on this occasion to the admirable plan worked out by the Division of Vital Statistics of the Census Office, under which weekly reports of deaths from all causes, and separately for ages under one, are transmitted by wire and made public in a consolidated form through the Associated Press within three days after having been assembled. The value of this method was particularly emphasized during the recent epidemic of influenza and pneumonia.

Finally, there remains a brief reference to the suggested section on health education and health propaganda and publications. The most serious objections lie against any form of ill-considered or superficial publicity, which while relatively rare is nevertheless sufficiently common to suggest an urgent word of caution. A single serious error or ill-considered statement of advice is likely to do more harm to a health organization, whether Federal, state or municipal, than all the good attained through a mass of irreproachable public utterances. The utmost caution is called for and only what is of real value should emanate from a Federal or a state health department, irrespective of the public clamor during a period of exceptional excitement, such as all are familiar with who passed through the epidemic of infantile paralysis, and the still more recent one of influenza. There is nothing more menacing to a public health service than a publicity department which considers it its duty to issue a continuous stream of bulletins, press notices, etc. It is absolutely unavoidable under such circumstances that, sooner or later, information or advice of a untrustworthy character is given publicity. The public has a right to be protected against the dissemination of ill-considered information or so-called "health news," which may be, and often is, seriously misleading or needlessly alarming. The field of health education has been enormously expanded during recent years, particularly through the coöperative efforts of health-promoting agencies such as the American Public Health Association, the National Tuberculosis Association, the American Society for the Control of Cancer, the National Safety Council, the Association for the Prevention of Infant Mortality,* etc. More active governmental participation in the work of these associations would materially aid in the highest attainable degree of success on the part of the Federal and state health administrations. In addition thereto, of course, the annual and special conferences of state and territorial health authorities, under the auspices of the Federal health service, fulfill a most important function. There can be no thoroughly effective coöperation between Federal and state health authorities unless the officials concerned know one another and know one another well.

No extended reference to the self-evident coöperation of the Federal health service with the sanitary and medical departments of the army and the navy, as well as with the health authorities of our non-contiguous or insular possessions, seems necessary. It is a foregone conclusion, of course, that such coöperation in the future would not only be most active, but follow much more carefully considered lines, based upon our war experience, than has heretofore been the case. Whether it would be necessary to make

* The title of this association has recently been changed to "American Child Hygiene Association."

special provision for such coöperation in a separate section is debatable. Any question arising could probably be taken care of by the section on health administration and organization, which, broadly speaking, should be made to serve all more or less general administrative and coöperative functions. Each and every section, it requires not to be emphasized, should be in charge of a specialist of national reputation. The scale of salaries and allowances should be liberal. If we are really in earnest in our claims that the health of the nation is a matter of paramount concern to all the people, we must be willing to pay the price. But in the long run a thoroughly well-paid and contented official staff will be the best possible investment as a guarantee against miscarriage of effort and failure to realize the best possible results.

Finally, the suggestion may be made that in the case of the Federal health administration as well as of the associations of the several states, provision requires to be made for an advisory council, rigorously limited to suitable expert ability. Such a council is urgently insisted upon in the proposed plan for a Ministry of Health for Great Britain. It has been recommended by the British Medical Association that such a council "should be appointed by the minister from nominations made by bodies recognized as having a special claim to representation. This claim should be based not on any supported vested interests, but on the ability of the bodies concerned to give expert advice on the subjects to be considered and to keep the minister in living touch with those bodies and classes of persons on whose coöperation the success of the new ministry would depend." Applied to the problem under discussion this would mean that the Federal health administrator, or the state health administrator, would attach to his office a body of experts recommended by associated activities such, for illustration, as the American Public Health Association, the American Red Cross, the National Tuberculosis Association, the National Safety Council, the National Committee on Malaria Eradication, the American Association for the Prevention of Infant Mortality, etc. Since the advisory services through the council would be individual rather than collective in the majority of cases in which such advice would be required, the membership of the council might be made relatively large. There should, of course, be representatives of the American Medical Association, the American College of Surgeons, the American Dental Association, the Mental Hygiene Association, the Social Hygiene Association, the Association of Pharmacists, etc., etc. There might even be representatives of related public activities, such, for illustration, as the American Statistical Association, the Association of Life Insurance Presidents, the U. S. Chamber of Commerce, the Association of Industrial Physicians, the National Industrial Conference Board, the National Association for School Hygiene, etc., etc. Assistance might also be drawn from the membership of the different sections of the American Association for the Advancement of Science, the American Anthropological Association, etc. The spirit of active coöperation and the willingness to render voluntary services are so thoroughly diffused throughout this country that it may safely be held that whatever voluntary assistance would be required by the Federal or state health administration in the directions indicated would be forthcoming without any difficulty whatever.

In the words of the late William Edward Hartpole Lecky:

"To raise the level of national health is one of the surest ways of raising the level of national happi-

ness, and in estimating the value of different pleasures, many of which, considered in themselves, might appear to rank low upon the scale, will rank high, if in addition to the immediate and transient enjoyment they procure, they contribute to form a strong and healthy body. No branch of legislation is more really valuable than that which is occupied with the health of the people, whether it takes the form of encouraging the means by which remedies may be discovered and diffused, or of extirpating by combined efforts particular diseases, or of securing that the mass of labor in the community should, as far as possible, be carried on under sound sanitary conditions."

The achievement of this ideal demands a decidedly more effective health administration, attainable only, however, upon new and broader conceptions, scientific as well as practical, than those which underlie the health organizations of today.

PROBLEMS OF CANNING.

WILLARD D. BIGELOW,
Washington, D. C.

Read before Food and Drugs Section, American Public Health Association, at Chicago, December 12, 1918.

This is a short and direct story in a matter in which everyone is interested, canned goods. The author shows the need of standardization and says a few things about milk.

DURING the past year distinct progress has been made in the study of a number of problems relative to canned foods, although at this time the studies are in such a stage that only a report of progress can be made. Several of the studies have proceeded to such a point that it is believed that publication regarding them will be made during the coming year. It would not be appropriate, therefore, to make definite statements regarding the results of these studies.

TIN PLATE INVESTIGATION.

The studies heretofore made have been planned with a view to increasing the knowledge of the corrosion of the tin and steel of the plate and also studying the possible influence of different kinds of plate on the discolorations occurring in the can. Some attention has also been given to the influence of the character of the plate on perforation of the can and hence on spoilage from that cause. At the present time the question of perforation is being intensively studied.

DISCOLORATION IN CANNED FOODS.

There are several types of discoloration that occur in canned foods owing to causes which are only partially understood and have no influence on the health of the consumer, but are objectionable because they detract from the appearance of the food. The discoloration which is met with most frequently is sulphid of iron due to the combination of hydrogen sulphid, traces of which are always liberated when any food is cooked, with the iron of the tin plate. This iron sulphid is in colloidal form and is often mixed with starch or other food material, so that it appears to be present in much larger amount than is actually the case. It is formed in patches on the inner surface of the can. The patches are located at the upper portion of the can which is not in contact with the food. Sometimes these black patches adhere

firmly to the can and are not removed when the contents of the can are emptied; sometimes they are of looser texture and become mixed with a portion of the contents when the latter is removed from the can. Because of the unattractive appearance of these patches it is desired to eliminate them if possible, and their nature and cause becomes one of the problems which should be solved. Some progress has been made on this subject, but much remains to be done.

Bacterial Flora in Canned Foods.

Work is progressing in several laboratories in the study of the types of bacteria to which spoilage of canned foods is usually due and the determination of the time and temperature of sterilization necessary with different foods to cause the destruction of those bacteria. It is hoped that some publication regarding this matter will be made during the coming winter.

Heat Penetration.

To make practical use of the study of bacteria referred to above, we must know the temperatures reached at the center of the can during processing and must know what time and temperature of sterilization are necessary to secure a certain temperature for a certain time at the center of the can. This question is greatly complicated by the wide diversity of the foods canned and also by the varying technological operations of the canning plants. The question is being attacked from different standpoints, however, both in laboratories and commercial canneries, and material progress has already been made.

Standards for Canned Foods.

The Committee on Definitions and Standards has given a relatively small amount of attention to canned foods. Definite standards have been adopted for canned peas which it is hoped will ultimately exert an influence on the wording of labels so that consumers can secure more definite information concerning the contents of the can by reading the label. The Committee has also adopted standards regarding evaporated and condensed milk which have been the subject of criticism from different standpoints and for different reasons.

Recently the Committee has considered the advisability of modifying the standards of evaporated and condensed milk and conducted public hearings with that in view a few days ago. It is the purpose of the Committee to require as high degree of concentration as is practicable for manufacturers to produce. In this connection several factors must be taken into consideration. The raw milk employed must have a lower degree of acidity than is necessary with market milk. After storage for a few weeks, particles of butter fat or of coagulated protein are likely to separate from the evaporated milk, causing an appearance which is not satisfactory to the American market.

Another question that is actively discussed with reference to evaporated and condensed milk is the propriety of standardization, that is, of modifying the composition of milk by removing a portion of the fat or by adding additional cream until a standard composition is obtained. This practice has become fairly general with market milk. The practice has both proponents and opponents and the same arguments for and against the practice which apply to market milk also apply to evaporated and condensed milk.

There is also the additional argument that milk with high fat content cannot be concentrated as much without subsequent separation as milk with low fat content. Standardization will, there-

fore, make it possible to produce evaporated and condensed milk of more uniform concentration as well as of more uniform composition. At the same time, the objections to standardization are obvious and have been stated frequently and the question cannot be decided without careful consideration.

The Committee on Definitions and Standards is considering the propriety of adopting standards for the composition of tomato pulp and puree. These products are being placed on the market to an increased extent in packages which go directly to the consumer. The tomato pulp now on the market varies from unconcentrated strained tomatoes to the product obtained by concentrating strained tomatoes to one-third of their volume.

The general question of the possibility of the application of standards to canned foods is receiving attention. Among other questions being studied is the proper fill in various types of canned foods. This matter has received some attention from the industry and during the last season extensive experimental packs were prepared by the Bureau of Chemistry and are now being studied for the amount of each variety of canned food which the can should contain.

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New Jersey State Health Department Establishes a Bureau of Venereal Disease Control.—The induction of several million men into military service showed that at least 10 per cent of the men are infected with an active form of venereal disease. It is believed that if laboratory tests were made on the secretions and blood of all the men, that the number of infected persons would reach 40 per cent. In order to combat this serious condition in the civil population the New Jersey State Health Department has established a bureau of venereal disease control, acting on the urgent request of the Federal government. It is planned to control the social diseases by enlisting the aid and coöperation of physicians, health officers, druggists, civic authorities and others interested in the campaign. Dispensaries will be established for examination and treatment of cases. The Department laboratories will be utilized to aid in detecting those who are diseased. Homes will be established for the detention of persons afflicted with venereal disease. A campaign of public education will also be inaugurated. Lastly, a general supervision of similar activities throughout the state is also planned.—*N. J. Public Health News*, Dec., 1918.

(*M. P. H.*)

◆

Falconer's Arithrometer.—An instrument has been designed by Wilbraham Falconer, Superintendent of Mechanical Treatment in the Red Cross Clinic for the physical treatment of disabled officers, for the purpose of measuring angles of movements of joints. Its construction is simple; it is easily adjustable to a limb—allowing the measurement to be taken quickly. It can be used with all joints.—Allen and Hanbury (48 Wigmore Street, London, W. I.), *The Practitioner*, Dec., 1918, p. 352.

◆

Trinitrotoluene in Rabbits.—Mary W. Brown, in the John McCormick Institute for Infectious Diseases, finds that rabbits are not poisoned by small doses of T. N. T. rubbed into the skin or by exposure to fumes of T. N. T. for a short length of time. There is great difference in individual susceptibility to doses taken by mouth. The blood shows minor appreciable changes while the same may be said of the spleen and marrow.—*Transactions of the Chicago Pathological Society*, Vol. X, No. 9, June, 1918.

◆

Sensitization of Animals.—By injecting a rabbit with normal human serum (Wassermann negative) subcutaneously, first with a large dose (10–12 cc.), then twice with a reduced dose (5 cc.), then inoculating subcutaneously in the flank scrapings from a syphilitic mucous patch, containing numerous terponemata, the animal becomes emaciated, shows a slight local reaction and after four weeks a positive Wassermann reaction is obtained with the serum. This reaction is, of course, negative with the serum of the normal rabbit or the rabbit injected simply with human serum. Under the conditions indicated, the rabbit was caused to react with the formation of antibodies to the inoculation of a virus towards which it is ordinarily indifferent. —R. Dujarric de la Rivière, *Compt. Rend. Soc. de Biol.*, Paris, 81, 28 (1918).

EDITORIAL SECTION

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A FRANK TALK.

Although nearly fifty years old, the American Public Health Association has somewhat less than 2,500 members. The Association has not taken the place that it should really fill in the public health field. Owing to lack of funds and of personnel it has been obliged to neglect important opportunities and responsibilities in the promoting of public health. Half a dozen associations devoted to special phases of public health have outstripped the American Public Health Association.

The broad scope of the Association and the official and professional character of its membership make it the logical agency to assume leadership in public health thought and action. One essential requisite to this end, however, is a large, vigorous, energetic membership. A small organization is handicapped when it undertakes to do big things.

There are at least 20,000 persons in this great country whose professional interests make them eligible to membership in the American Public Health Association. Only one-eighth of these are now enrolled in its lists. Experience shows that personal contact is required to bring the Association to the attention of these un-enrolled men; letters alone cannot be depended upon. And here our members must help.

In asking your help, your Association appeals primarily to your loyalty and altruism. But do not forget that a larger membership implies that the Association can do more for you as well as for the cause. A large, well-supported organization can conduct propaganda for better legislation; it can more effectively present the necessity for adequate remuneration; it can better give its members the information needed in the daily work; and in a dozen other ways, can better support the great cause in which its name places it.

The future of the American Public Health Association lies in the hands of its members of today. Will you do your share in doubling our membership by bringing in *one* new member?

PUBLIC HEALTH EDUCATION.

It is worth while today to call to the attention of young men and women of this country that unexampled opportunities are afforded for training in public health work, opportunities that have had their origin in the value which war has placed on the health needs of the people, whether in camps or in cities.

There are a great many of the members of the Army Medical Corps who are now returning to civil life. A relatively large ratio of them have already received a partial training in sanitation and public health, and these persons, women as well as men, by a little further study, a short period of supplementary training in schools, will be equipped for active and practical public health work.

One of the great drawbacks heretofore has been the lack of trained men in public health work. The profession will therefore welcome a supply from this source and will offer the men every encouragement to complete their education at some one of the schools offering courses in public health studies.

There are a number of such schools that have presented their announcements in the advertising pages of the JOURNAL, while in its issue of last August the JOURNAL, in an article by Professor Howe, set forth a complete list of the schools then existing. The following schools of public health have come to our attention:

Albany Medical College and State Board of Health, Albany, N. Y.
Chicago Hospital College of Medicine, Chicago, Ill.
Detroit College of Medicine and Surgery, Detroit, Mich.
Harvard University and Massachusetts Institute of Technology, School of Public Health, Cambridge, Mass.
Harvard University Medical School, Department of Preventive Medicine, Boston, Mass.
Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Md.
Massachusetts Institute of Technology, Department of Biology and Public Health
New York Academy of Medicine and New York Bureau of Municipal Research, New York City
New York University and Bellevue Hospital College, New York City
Ohio State University, Columbus, Ohio
Queens University, Kingston, Canada
Syracuse University, College of Medicine, Syracuse, N. Y.
Tulane University, New Orleans, La.
University of Colorado, Boulder, Col.
Union University, Albany Medical College, Albany, N. Y.
L'Universite Laval, Montreal, Canada
University of Michigan, Ann Arbor, Mich.
University of Pennsylvania, Philadelphia, Pa.
University of Toronto, Toronto, Canada
University of Wisconsin, Madison, Wis.
Western University, London, Canada
Yale University, New Haven, Conn.

PAPERS FOR THE NEW ORLEANS MEETING.

The program committees of the Association are now beginning to plan for the meetings to be held at New Orleans, October 6–9. The main topics of discussion will include: Southern problems such as malaria, hookworm, typhoid, the outhouse; influenza; coördination of national state and local health activities; practical helps to health officers.

The last named subject is expressly included as a result of a resolution passed at the Chicago meetings urging that in addition to the general scientific papers, advice be offered to the less experienced health officers upon such practical administrative problems as health appropriations, the attitude generally of appropriating bodies, the relationship between appropriations and the condition of public health, etc.

The Association will do everything in its power to make the annual meeting a means of giving the public health movement in the South the maximum impetus.

From the Chicago meetings, the most successful in our history, have come some excellent suggestions for further improving the quality of our programs. It has been suggested, for example, that those offering papers submit either manuscripts or short abstracts of about 200 words to the respective program chairmen. This expedient will be of especial service in cases where speakers are not well known to the program committees.

An effort will be made to have as many joint meetings among sections as possible, thereby saving the delegate the embarrassing necessity of often choosing between two or three section meetings, in all of which he is interested.

Although suggestions for the New Orleans programs are desired as early as possible in order that they may be considered by the full program committees, it has been suggested that program committees definitely accept no papers until well along in the summer. This will obviate the necessity of canceling papers in the event that readjustments of programs become necessary.

The various program committees will be glad to receive the suggestions of our membership concerning subjects and speakers. For this purpose a suggestion slip is printed at the end of this article. Following is a list of the section corresponding officers for the various program committees:

General Sessions: Mr. A. W. Hedrich, 169 Massachusetts Ave., Boston, Mass., secretary of program committee.

Sanitary Engineering: Mr. Paul Hansen, State Board of Health, Springfield, Ill., program chairman.

Food and Drugs: Prof. James O. Jordan, City Hall Annex, Boston, Mass., program chairman.

Vital Statistics: Mr. Richard C. Lappin, Bureau of the Census, Washington, D. C., program chairman.

Sociological: W. H. Brown, M. D., 280 Glenwood avenue, Bridgeport, Conn., program chairman.

Public Health Administration: William F. Cogswell, M.D., Helena, Mont., program chairman.

Laboratory: A. B. Wadsworth, M.D., 278 Yates street, Albany, N. Y., program chairman.

Industrial Hygiene: A. J. Lanza, M.D., U. S. Public Health Service, Pittsburgh, Pa., program chairman.

To the Program Committee of the.....

I suggest the following paper for your program at the New Orleans meeting of the Association, October 6–9, 1919:

.....

.....

For speaker, I suggest:.....

.....

.....

Signed.....

Address.....

LOCAL MEMBERSHIP DRIVES THROUGH COMMITTEES.

Inasmuch as competition always is an incentive in any undertaking, whether of business or of pleasure, the American Public Health Association has introduced such a feature in its "New Member per Member" campaign. Communities, irrespective of size, are invited to organize committees for local membership drives through personal solicitation. The general procedure should be to call a meeting of American Public Health Association members in the city or district involved, to have the latter suggest prospective members, to appoint sub-committees who will issue personal invitations to join, and to elect team captains, etc.

Any community may enter the contest, whether it has one member or several hundred.

The basis of comparison will be the ratio of increase over the pre-campaign membership, thus giving the small community an equal opportunity with the larger one.

News concerning the status of the teams will be carried in the Journal and in the News Letter both during the campaign and at its conclusion.

Several points are to be emphasized: first, that memberships already sent in by individuals will be credited to the community forwarding them; second, that in fairness to Southern and Western cities, the postal distances from Boston will be taken into account in figuring returns.

Final returns should be mailed from Boston by Thursday, April 30; other cities will receive an extra time allowance equal to the postal distance from Boston.

At the Chicago meetings in December a number of challenges were issued, and a lively and enjoyable rivalry between cities is to be expected.

Preliminary results of the contest will be announced in the News Letter appearing April 20 and the Journal appearing May 5. Final results will be published in the News Letter appearing May 20.

The first step is to call a meeting of A. P. H. A. members of your locality. Will you not telephone or write your local health commissioner or a director of the A. P. H. A. and offer him your co-operation?

ASSOCIATION ACTIVITIES.

It will be necessary merely to glance through the pages of the JOURNAL to realize that the Association is now entering into a number of activities, the realization of the wishes of the Executive Committee for some years past.

First and foremost you will be aware that the membership campaign is started. Evidence of this has come to you already in the personal letter of President Frankel, one of which with his autograph having gone to every member. What is asked is very simple: merely the coöperation of every member towards a bigger, better and busier Association, able through its increased income to enlarge the scope of its work.

Another feature of the year is the activity of the president in interesting different sections of the country in the work of the A. P. H. A. Already he has visited Cincinnati and Louisville; and by the time this JOURNAL is in the hands of its readers he will have visited Chattanooga, and will have formed his plans for a paper before the Medical Society of Ohio and a conference with the Indiana Health Officers' Association. At the same time the committee having in charge the Annual Meeting in New Orleans is steadily at work, getting together matters that will make that meeting "the best ever."

One of the very important matters broached at Chicago is the movement towards the conservation of energy through the coöperation of the many national health agencies of the country. This is in line with modern thought and has received serious consideration by the Executive Committee. It bids fair to unite the effort of great forces in the country in a way that has never hitherto been possible.

Still another matter of consequence undertaken by the Association is the work towards unification of effort in various of the states. This has already borne fruit in the movement towards the formation of a Kentucky state health association, and in Massachusetts, in steps towards a state-wide health association.

GRUNEWALD HOTEL WILL BE A. P. H. A. HEADQUARTERS IN NEW ORLEANS.

At a meeting of the Central Committee, New Orleans A. P. H. A. Meeting, which was held in New Orleans March 19, it was decided to select the Grunewald Hotel for Association headquarters during the meeting of October 6–9. The St. Charles Hotel will afford additional space for meetings and for accommodations.

A. P. H. A. NEWS LETTER.

The A. P. H. A. began on March 20th the publication of the News Letter. All members and subscribers have already seen it and it tells its own story. It will cover the lighter field in public health work as the JOURNAL is covering the scientific field.

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Do not fail to look over the Color Insert—back a page—and see how fast New Members are coming in.

OMISSIONS IN OUR MEMBERSHIP LIST

In the mimeographed state lists of members recently sent out in connection with the membership campaign, omissions will be found of the names of some of our most valued members. Such omissions are usually caused by one of the following reasons:

Delayed notice of changed address;

Listing memberships under the name of a department instead of the individual;

Delayed payment of dues;

In addition, Subscribers to the Journal, not being members, were not in the lists.

A few instances of accidental omission will be found. This follows from the necessarily rapid preparation of lists outside of our office, under conditions that did not permit careful checking. As such errors are pointed out to us, we shall be glad to publish corrections.

ASSOCIATION NEWS

HELP WANTED.

In order to help relieve the shortage of sanitarians due to the war, free help-wanted announcements will be carried in this column until further notice. Copy goes to the printer on the fifteenth of each month. In answering keyed advertisements, please mail replies separately.

The Health Employment Bureau also sends lists of applicants to prospective employers without charge.

Bacteriologist in a Massachusetts municipal health department laboratory, with at least one year's experience in public health laboratory work. Male physician preferred. Salary $1,500. Address D. H. B. No. 190, care of this JOURNAL.

Public health nurses or trained social workers for county health work. Salary, $1,200. Also woman with experience in making hookworm examinations in laboratory, with salary $900. Address L. A. R. No. 202, care of this JOURNAL.

City Physician for health department in Michigan. Salary $2,400. Address H. N. No. 211, care of this JOURNAL.

School Physician for health department in Michigan. Salary $2,400. Address H. N. No. 212, care of this JOURNAL.

Director of laboratory, department of health officer, Port of New York. Salary, $3,500. Requirements: Broad knowledge, both theoretical and practical, of bacteriology, and knowledge of general pathology. Executive ability. Candidates rated on education, experience, and personal qualifications. Apply for form before April 14 to State Civil Service Commission, Albany, N. Y.

Laboratory apprentice, New York State Department of Health. Salary, $720. Man or woman, age 18 to 30 years. Requirements: College education or its equivalent. Knowledge of bacteriology and practical laboratory experience desirable. Written examinations in elementary physics and chemistry with consideration given for education and experience. Open to non-residents. Apply for form before April 14 to State Civil Service Commission, Albany, N. Y.

*

Army Photographs Wanted.—In connection with this campaign for the employment of the returning war sanitarians, the Association is in need of good photographs illustrating the various phases of army health work. If you have any such photographs send them to the Association at 169 Massachusetts Avenue, Boston, Massachusetts. Due credit will be given upon publication.

Incidentally the editor of the JOURNAL is always glad to receive good photographs illustrative of health work together with a short descriptive story.

Do all the members of your Board of Health belong to the A. P. H. A.? If not, invite them in. We can help them discharge their duties more efficiently and your Department would be abundantly justified in paying their membership fees.

NEW MEMBERS.

Elected to membership in the American Public Health Association during March:

Henry C. Allen, Camp Gorden, Ga.

C. C. Applewhite, A. B., M. D., Atlanta, Ga., Ass't Epidemiologist, U. S. Public Health Service.

Thomas H. Argue, M. D., Saskatchewan, Can., Health Officer.

Lloyd T. Binford, Atlanta, Ga.

Marguerite Bond, B. S., Adams, Mass., Acting Bacteriologist, Bd. of Health Lab., Brockton, Mass.

S. Borton, D. O., Golden, Ill.

Clarence J. Broeman, M. D., Cincinnati, Ohio, Acting Ass't Surg., U. S. Public Health Service.

Raymond V. Brokaw, M. D., Orange, Texas, Field Director, State Bd. Health.

A. H. Burnett, Cincinnati, Ohio.

Edw. A. Cahill, V. M. D., Zionsville, Ind., Director, Pitman Moore Biological Labs.

George H. J. Chapman, Toronto, Ont., Laboratory Technician.

L. E. Close, Massena, N. Y., Bacteriologist.

David J. Davis, M. D., Ph. D., Wilmette, Ill., Prof. of Bacteriology, Univ. of Ill.
R. D. Dedwylder, M. D., Indiana, Miss.
H. A. Dittmer, M. D., Manchester, Iowa.
Charles P. Fox, M. Sc., Dayton, Ohio, Chemist.
S. Watson Fox, M. D., Philadelphia, Pa.
Sol H. Freiberg, Cincinnati, Ohio, Treas. Anti-Tuberculosis League of Cincinnati.
C. W. Fry, M. D., Huntington, Ind., County Health Commissioner.
Arthur E. Gorman, B. S., Columbus, Ga.
J. Victor Greenebaum, A. B., M. D., Cincinnati, Ohio.
Reba C. Haner, Sun Prairie, Wis., Laboratory Technician.
Maurice Hexter, Cincinnati, Ohio, Director, United Jewish Charities.
J. Hogan, M. D., Chicago, Ill.
E. Murphey Howard, M. D., Harlan, Ky.
Earle H. Ingram, M. D., Philadelphia, Pa., Plant Physician, Wm. Cramp & Sons Ship Bldg. Co.
Thomas W. Jackson, M. D., Harrisburg, Pa., Ass't to Comm. of Health, Phila., Pa.
John Shillito Co., Cincinnati, Ohio, Department Store. (Corporate.)
Wm. Sebald Keller, M. D., Cincinnati, Ohio.
Philip G. Kitchen, M. D., Upper Darby, Pa.
E. Klaveness, M. D., Minneapolis, Minn., President and Med. Director, Surety Fund Life Co.
H. Logan, M. D., Niagara Falls, Ontario.
Lois V. Lyon, University, N. D.
Donald Mackie, Edmonton, Alberta, Registrar of Vital Statistics, Prov. of Alberta.
Amy G. Maher, Toledo, Ohio.
John F. Mahoney, Ft. Worth, Texas, Assistant Surgeon, U. S. Public Health Service.
Bleecker Marquette, M. D., A. B., Cincinnati, Ohio, Exec. Sec., Better Housing League.
A. A. Mees, Cincinnati, Ohio, Act. Supt., Anti-Tuberculosis League.
W. R. Morrison, M. D., Cincinnati, Ohio, Teacher, Hygiene and Physical Education, Cinn. Univ.
H. S. Mustard, Phila., Pa., U. S. Public Health Service.
National Housing Ass'n, New York City.
Ralph W. Nauss, B. Sc., M. D., Dr. P. H. Fresno, Cal., State District Health Officer.
Harold Nightingale, S. B., Dallas, Texas.
O. J. Nothenberg, M. D., Chicago, Ill., Health Officer.
Gilman W. Petit, M. D., Chicago, Ill., Open Air School Physician.
Pollack Steel Co., Cincinnati, Ohio, Manufacturers Steel Forgings. (Corporate.)
Rosa E. Prigosen, B. A., Baltimore, Md., Student, Johns Hopkins Medical School.
Proctor and Gamble Company, Cincinnati, Ohio. (Corporate.)
Provincial Treasury Dept., Victoria, B. C.
Richard O. Richards, Huron, S. Dakota, Science in Government.
Hiram H. Roehm, B. S. A., M. S., Syracuse, N. Y., Bacteriologist.
Edward J. Scannell, Trinidad, Colo.
James R. Scott, M. D., Ph. D., Los Angeles, Cal., Pathologist, Los Angeles County Hospital.
Max Senior, New York City, Ex. Com., National Conference Jewish Charities.
South Carolina Anti-Tuberculosis Ass'n, Columbia, S. C.
Harriet Staples, R. N., Mendham, N. J.
Frederick O. Tonney, Chicago, Ill., Director of Labs., Chicago Dept. of Health.
John C. Torrey, A. B., Ph. D., New York City, Prof. of Hygiene, Cornell Medical College.
Francisco Borges Viera, M. D., Baltimore, Md., Student in Public Health.
Alden H. Waitt, Medford, Mass.
Western & Southern Life Ins. Co., Cincinnati, Ohio, Life Ins. (Corporate.)
Women's Municipal League of Boston, Boston, Mass.
Ruth I. Workum, Cincinnati, Ohio, Exec. Sec., Ohio Humane Society.

CAMPAIGN NEWS NOTES.

Here are some of the first responses to President Frankel's call:

William De Kleine, Health Officer, Flint, Mich.: "I am enclosing two memberships for the A. P. H. A."

William Levin, Captain S. C., U. S. A.: "Enclosed please find checks for $20 covering dues for four proposed members of the Association."

A. T. McCormack, Sec. Kentucky State Board: "This Board at its last session decided that each of its members and the heads of departments should become members of the A. P. H. A., so as to receive the benefits of the Journal and its other work. Send me membership bills for any who have not already paid."

C. M. Goddard, State Health Officer,

Austin, Tex.: "Assuring you that I shall appreciate the honor of having my name enrolled as a member of the A. P. H. A."

Henry Boswell, M. D., Miss. State Sanatorium: "Enclosed please find checks for $15. Please enter these and I hope to be able to send others in the near future."

Note.—Dr. Boswell had a special form multigraphed for sending in applications.

Dr. W. T. Sedgwick, Mass. Institute of Technology: "You are certainly making things hum and I congratulate you. I shall do my best to get some new members for you."

W. S. Rankin, M. D., Secretary, State Health Department, North Carolina: "I am heartily in accord with your earnest efforts to increase the membership of the association. I hope to secure for you two members if not four."

Wisconsin Anti-Tuberculosis Association: "Will you kindly send us 86 membership cards?"

Henry F. Vaughan, D. P. H., Detroit, Mich.: "I wish to congratulate you on the splendid advance which the Association has made in the field of public health during the past year and a half."

S. L. Jenson, M. D., Charleston, W. Va.: "Here is your member. Enclosed is the application of one of our assistant engineers, the last of our office force to join the Association."

William Duffield, M. D., Los Angeles: "I enjoy the Journal and as long as I practice medicine I will not be without it if it maintains its present standard."

John Hamilton, M. D., Iowa City, Iowa: "Since you were so good as to stir me out of my lethargy I am anxious to secure new members for the Association. . . . Kindly send me more blanks. I intend to extend invitations to a number of influential people in this community."

Merrill E. Champion, Mass. State Health Department, Boston: "I have turned in one new member and hope to be able to turn in others."

W. S. Leathers, M. D., Jackson, Miss.: "I have received the ten cards and have sent them out to ten members of our staff with typewritten letters."

THE "MEMBER PER MEMBER" CAMPAIGN

Is now really underway.
Our Colored Insert will tell you the late news.
Everybody is going to help.
You are going to help, and get *one* new member.
In case you have mislaid your blank application, *Don't be* discouraged—*Here* is another.

Tear off, fill out, and send this slip to:

SECRETARY, AMERICAN PUBLIC HEALTH ASSOCIATION,
169 Massachusetts Ave., Boston, Mass.

I nominate for membership

Name.....

Address.....

..... (Date)

..... (Signed)

..... (Please write your address)

BOOKS AND REPORTS REVIEWED

Children Well and Happy. *May Bliss Dickinson, R. N. Boston: Le Roy Phillips.*

In this little volume, very attractively printed, Miss Dickinson has embodied her ideas as to what should be taught our school girls concerning motherhood and the care of children. The objects of this book, and of the Girls' Health League of which it is the text book, are to present in clear, concise, practical and yet attractive form, that which young girls cannot know too intimately, namely, the care of themselves and of others, particularly babies, and the ordinary rules of health and hygiene.

Numberless text books have been written on this subject before. The reviewer knows of none, however, where the subject is so plainly and attractively handled and where, in addition, it is backed up by a definite scheme, for its presentation in public schools.

This little book is an eloquent reminder that one of the great fundamental aims of our modern educational scheme is to teach children the essentials of health and resulting happiness.

John B. Hawes, 2nd, M. D.

*

The Chemistry of Food and Nutrition. *Henry C. Sherman, Ph. D., Professor in Columbia University. The Macmillan Company, New York, 1918. Pp. 454. Price, $2.*

The second edition of this book, which has been rewritten and enlarged, continues to serve its main purpose, namely, to act as a text-book for students of the subject. There are three entirely new chapters. One deals with fats and lipoids, another with anti-scorbutic and anti-neurotic properties of food, and the third, with food in relation to growth and development. The chapters on inorganic foodstuffs and mineral metabolism, and dietary standards and the economic use of foods, have been considerably enlarged. The other chapters deal with carbohydrates, proteins, enzymes and digestion, the fate of foodstuffs in metabolism, the fuel value of food and the energy requirement of the body, and the conditions governing them.

In the light of recent investigations, our ideas of an adequate diet have changed materially. It is necessary not only to have a proper amount of protein, carbohydrate, fats, and mineral salts in the diet, but there must also be other substances, still unknown in chemical composition, which are essential to good health, mature development, and the normal functioning of the organism. These unknowns are essentially four in number, namely, the anti-scorbutic ingredient in foods, the anti-neurotic ingredient, fat soluble A, and water soluble B. An adequate diet must now have the following five essentials: (1) An adequate energy value; (2) proteins sufficient in quantity and suitable in their amino acid make-up; (3) ash constituents each in sufficient quantity and all in well-balanced proportions; (4) fat soluble A; (5) water soluble B. The author also emphasizes the fact that climate, season, housing and clothing, all affect the energy requirements of the body.

The book is well written, and covers the subject thoroughly for those who desire some knowledge about the elements of the chemistry of foods and nutrition. Numerous original sources have been drawn on for information, and the book contains many tables which summarize the results of previous investigations. The book is recommended to dietitians, social workers, health officers and all others interested in the subject of nutrition.

Murray P. Horowitz.

*

Information for the Tuberculous. *F. W. Wittich, A. M., M. D., Physician in Charge of Tuberculosis Dispensary in the University of Minnesota Medical School; Visiting Physician to University Hospital, Minneapolis. St. Louis: C. V. Mosby Company. Pp. 150. Price, $1.*

This book is the result of many requests from those who exhibited great interest in weekly talks given by the author while he was doing sanatorium work. It answers the questions which frequently arise and which are constantly asked by hundreds of patients when first learning that they are tuberculous.

To conquer tuberculosis in the shortest possible time, the patient must eat well in order to nourish his body; he must be a real optimist to keep his mind pleasantly occupied; he must own a great fund of common sense so as to go on steadily toward recovery without being led astray by quack medicines and poor advice; he must possess patience in unlimited abundance to prevent his growing weary of the long, long siege; he must enjoy being courageous so as to work bravely on in the right way even though his progress may seem but slow; he must have superlative will-power which compels him to fight every day—for he must fight if he will win.

Doctor Wittich's book is written in a thorough and simple manner and should prove a wonderful help to those tuberculous patients who would fight to win.

Clarence D. Hart.

THE COLLECTED WORKS OF JOSEPH LISTER*

Published by Henry Frowde & Hodder & Stoughton, London, 2 Vols.

Lancet, 1867

"The frequency of disastrous consequences in compound fracture, contrasted with the complete immunity from danger to life or limb in simple fracture, is one of the most striking as well as melancholy facts in surgical practice.

"If we inquire how it is that an external wound communicating with the seat of fracture leads to such grave results, we cannot but conclude that it is by inducing, through access of the atmosphere, decomposition of the blood which is effused in greater or less amount around the fragments and among the interstices of the tissues, and, losing by putrefaction its natural bland character, and assuming the properties of an acrid irritant, occasions both local and general disturbance. . . .

"Turning now to the question how the atmosphere produces decomposition of organic substances, we find a flood of light has been thrown upon this most important subject by the philosophic researches of M. Pasteur, who has demonstrated by thoroughly convincing evidence that it is not to its oxygen or any of its gaseous constituents that the air owes this property, but to minute particles suspended in it, which are the germs of various low forms of life . . . resolving the complex organic compounds into substances of simpler chemical constitution. . . . "

Lancet, 1870

"But, to the great disappointment of all concerned, this noble structure proved extremely unhealthy. Pyæmia, erysipelas, and hospital gangrene soon showed themselves, affecting, on the average, most severely those parts of the building nearest the ground. . . . For several years I had the opportunity of making an observation of considerable though melancholy interest, namely, that in my accident ward, when all or nearly all the beds contained patients with open sores, the diseases which result from hospital atmosphere were sure to be present in an aggravated form; whereas when a large proportion of the cases had no external wound, the evils in question were greatly mitigated or entirely absent. . . . The wonder now was not that these wards upon the ground-floor had been unhealthy, but that they had not been absolutely pestilential. Yet at the very time when this shocking disclosure was made, I was able to state, in an address which I delivered to the meeting of the British Medical Association in Dublin, that during the previous nine months, in which the antiseptic system had been fairly in operation in my wards, not a single case of pyæmia, erysipelas, or hospital gangrene had occurred in them.

"I almost forgot the kind of considerations which used to determine me to amputate under the old treatment; though I know that experience taught us that it was only in comparatively mild cases that it was justifiable to attempt to save the limb. Now, however, there is scarcely any amount or kind of injury of bones, joints, or soft parts which I regard as inconsistent with conservative treatment, except such destruction of tissue as makes gangrene of the limb inevitable as an immediate consequence.

"The emanations from sores are poured directly into the confined atmosphere in which the patients are; and any one familiar with the faint sickly smell commonly perceptible in surgical wards under ordinary treatment, and still more with the stench which prevails at the time of the daily dressing, will readily understand that putrid exhalations from the patients may be a source of mischief, compared with which the other circumstances alluded to may be of comparatively trifling consequence."

British Medical Journal, 1890

"Now that we are all agreed that microbes are the evil with which we have to contend, it is surely wiser to insure by germicidal means their entire absence from our hands and instruments rather than trust to the most perfect cleanliness in the ordinary sense of the term. . . .

"Since we abandoned the spray, three years ago, we have been careful to compensate for its absence, not only by antiseptic washing and irrigation, but by surrounding the seat of operation with widespread towels wrung out of an antiseptic solution. For the spray, though useless for the object for which it was originally designed, had its value as a diffuse and perpetual irrigator, maintaining purity of the surgeon's hands and their vicinity as an unconscious caretaker. But if besides the spray we give up all washing and irrigation of the wound, our vigilance must be redoubled. Yet I believe that, with assistants duly impressed with the importance of their duties, the task would prove by no means difficult. . . .

"In this referring to my own work, I do so, believe me, in no boastful spirit; but in the hope of stimulating some of those whom I address on this memorable occasion to more thorough earnestness in pursuit of the great objects of antiseptic surgery."

(*C. M. H.*)

*This is another of the series of extracts from classic public health literature selected by Prof. C. M. Hilliard, Associate Professor of Biology and Public Health, Simmons College, Boston.

PUBLIC HEALTH NOTES

Abstracts by D. Greenberg, M. P. Horowitz and Mayo Tolman.

Misuse of the Word "Drugs."—With loose terminology that so speedily finds favor among the Americans which newspapers follow, there is today a continual misuse of the word "drugs," that could hardly be more universal were it the result of direct effort. Inasmuch as the degrading of the word in its application to "dope" tends to weaken confidence in essential drugs, pharmacists and druggists together with physicians are making an effort in various parts of the country to set the public right. This movement is quite strong on the West Coast and is worth while. There is an old saying about, "Give a dog a bad name," which is founded on the wisdom of ages. There are a number of popular appellations that presently become weapons against worthy causes or matters. The confusion of the legitimate and beneficial drug with the unlawful narcotic is working injury in most important business matters.

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The Conference of the Massachusetts Girls' Health League in Boston was significant of the great progress of this important new health educational work for school girls. This conference was arranged by the Girls' Health League Committee of the Massachusetts State Federation of Women's Clubs, under the direction of Mrs. Herbert J. Gurney, president of the Federation.

Governor Coolidge expressed the commendation of the Commonwealth for the splendid work the women of Massachusetts accomplished during the war, and pointed out the great task before them in educating girls as the future mothers of the race.

Dr. Payson Smith, commissioner of education of Massachusetts, urged physical education in the public schools and strongly sanctioned the work of the Girls' Health League. He emphasized that the school is not the place for the teaching of sex hygiene; that this should be left with parents.

Dr. D. A. Sargent, physical director of Harvard, spoke on the importance of physical training as a preparation for motherhood, and urged that the Girls' Health League be considered an important agency to this end.

Mr. Bernard J. Rothwell, chairman of the Massachusetts Immigration Bureau, laid stress upon the need of teaching English to immigrants and spoke of the value of the education of immigrant girls in the care of babies.

The demonstration class of twelve girls was led by Miss May Bliss Dickinson, R. N., founder of the league movement. This demonstration proved of great value in showing how the classes are conducted in many of the cities and towns of Massachusetts.

A question box was conducted by Mrs. Irving O. Palmer.

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Industrial Medical Service.—The Medical Department of the Endicott Johnson Company at Endicott, N. Y., has treated an average of 900 patients per week since the department was started in May, 1917. The department gives medical and surgical advice and treatment to all employees of the company and their families. No charge is made for the services of the physicians or nurses or for medicines. Optical and obstetrical work are included. All the physicians employed are general practitioners.

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Anti-Venereal News.—The U. S. Public Health Station Division of Venereal Disease is conducting approximately 175 clinics. During the month ending December 15, 1918, there was a total of 19,456 visits to 29 clinics or an average daily attendance of 38 per clinic.

There were 2,489 new cases, an increase of 188 over the previous months. More than 25,500 treatments were administered.

Twenty thousand druggists have pledged themselves not to sell nostrums for treatment of venereal disease and five thousand newspapers have agreed not to publish the advertisements of "clapp" doctors. —*U. S. P. H. S., P. H. Reports*, IV–5. (*M. T.*)

You will find plenty of people in your community ready to be taken into the A. P. H. A. They need us. Review your acquaintances among the following: Members of boards of health, health officers, laboratory men, school medical inspectors, insurance medical directors, your library, welfare associations, teachers, sanitary engineers.

Relation of Meteorological Conditions to the Prevalence of Pneumonia.—As a result of an extensive statistical study of the prevalence of lobar pneumonia in relation to meteorological conditions, Dr. David Greenberg, of the Yale Medical School, concludes that the most important factor controlling pneumonia is temperature. When the variations in temperature are great there are correspondingly large increases in the death-rate. Small variations in temperature apparently react favorably on the organism. It was also found that a low relative humidity is conducive to high death-rates and a high relative humidity to low death-rates from lobar pneumonia. The effect of wind is considered of small importance. Lobar pneumonia is most prevalent during the first three months of the year and is least prevalent during the months of July, August and September.—*Journal A. M. A.*, Jan. 25, 1919. (*M. P. H.*)

Prevention of Blindness.—The North Carolina State Board of Health, through its press articles, has started a campaign to bring before all mothers the provisions of an act of the General Assembly of 1917 creating a law to prevent soreness in the eyes of the newly born. This act provides for the free distribution by the Bureau of Epidemiology of the State Board of Health of silver nitrate in 2, 6 and 12 drop ampoules to physicians and midwives for use in the eyes of the newly born. A violation of the law, which absolutely requires that such drops be used, constitutes a misdemeanor and imposes a maximum penalty of $50 fine or thirty days on the county roads.—*N. C. State Board of Health*, Feb. 5, 1919. (*M. T.*)

Educating the Public Against Venereal Diseases.—The United States Public Health Service has recently issued a series of bulletins, pamphlets and posters in its educational campaign against venereal diseases. The titles of some of these are: Keeping Fit, The Problem of Sex Education in Schools, When They Come Home, Shall We Finish the Fight, On Guard, and Man Power. The pamphlets are attractively illustrated, and contain not only information regarding the venereal diseases, but sound advice on how to live a clean, healthy sex life.

The four great factors that produce human ineffectives as judged by recent experiences in the draft are defective eyesight, poor teeth, bad feet and venereal disease. The proper care of the eyes may be maintained by working in a good, clear light at all times; by keeping the eyes at least 12 inches from the work; by resting the eyes at least every hour, either by closing the eyelids for a few minutes or by looking at a distant object; by avoiding eye strain of any kind; and by avoiding the use of the common towel. The teeth may be preserved by regular cleaning and by proper dental care once every six months. The feet should be washed frequently and only shoes that fit should be worn.

In order to keep fit, it is urged that the individual should have sufficient exercise of the right kind in the open air; that at least eight hours' sleep should be obtained every night, and that sleeping should occur in fresh air; that the workroom of the individual should be properly ventilated; that the individual should have proper food; and lastly, that he should have a sex life which is healthy.

The importance of the glandular secretions to the health of the body is emphasized. Special reference is made to the secretions of the testicles which are absorbed by the blood and carried to all parts of the body. Masturbation is condemned as an evil practice; also because it weakens the will power and moral fiber of the individual. Athletics, a sense of self-respect, and will power will cure this habit. Thinking about sex or looking at things which excite sex feelings should be discouraged by the individual. Nightly emissions should be considered as normal functions of the body if they do not occur too often. To avoid these emissions it is wise not to sleep on the back or to drink much water before retiring, or to be covered too warmly. If an individual is troubled with a venereal disease or any sex difficulty, only a thoroughly reliable physician should be consulted. It is also urged that proper sex education must be begun early in the child's life under favorable surroundings and by a good teacher. A fine, moral relationship with girls should be encouraged in every way.—*Venereal Disease Bulletins*, U. S. P. H. Service. (*M. P. H.*)

Marrying in the Same Shop.—In an article on Occupational Propinquity as a Factor in Marriage Selection, by Donald M. Marvin, that appeared in the September, 1918, number of the *Quarterly of the American Statistical Association*, we read that a girl's choice of her vocation has a directing influence in deciding from which occupation she will marry her husband; further that it will be possible to predict with as much certainty as is offered by the Mendelian Law what the chances are for a girl entering a certain occupation to have her children enter the same occupation. Specialization of ability through heredity, environment and training, is favored by the propinquity of like types of men and women in industry. Sex propinquity in modern industry seems destined to affect the matings, and through the matings, the type of the coming generation. (*M. T.*)

Popular Drive for a Tuberculosis Sanatorium.—In February a mass meeting was held in Boston to inaugurate a popular drive for $500,000 for a central New England Sanatorium. It is the purpose of the committee in charge to erect a large establishment at Rutland, Mass., to care for the great middle class of tuberculates, who are too poor to afford the best private sanatoria, and who do not wish to go to municipal or state sanatoria. It is also planned to utilize the proposed sanatorium for the returning tuberculous soldiers.

Dr. E. H. Kelley, Massachusetts State Health Commissioner, showed how preventive health work has saved thousand of lives, outlined the great value of health administration in the reduction of communicable diseases generally, especially those that are insect-borne or in which it is possible to control the environment. He noted, however, that less has been the progress against respiratory diseases and those spread by contact.

Dr. David R. Lyman, president of the National Tuberculosis Association, noted how the practising physician is often too busy to treat the chronic case of tuberculosis, which often times looks quite well, and emphasized the importance of reaching the incipient case if hoped for progress is to be made against the disease. He characterized the sanatorium as a university of public health and one of its prime accomplishments is that it teaches the tuberculous how to live hygienically and makes of them in turn the missionaries of the gospel of healthy living.

Miss Mary Beard, president of the National Public Health Nurses' Association, told of the great psychological factors that enter into the work of the community nurse.

Dr. G. E. Vincent, president of the Rockefeller Foundation, outlined the anti-tuberculosis work that Americans have been conducting in France, laying especial emphasis on the work conducted by Dr. S. M. Gunn. He noted that the factor that the Americans brought into this great effort in France was the unification and coördination of the numerous individual forces that already existed for combatting the great white plague. (*M. P. H.*)

Educational Prophylaxis of Venereal Diseases.—Starting with the obviously true assumption that voluntary exposure of the individual is the chief factor in the spread of venereal disease, the author develops the theory and practical mechanism or means of appeal to the individual. Educational prophylaxis does not mean a series of sermons on morals. It does mean a simple, clear presentation of the biologic principles underlying sex physiology, and sex psychology and this is the basis of the lecture work used in the Army and Navy.

In addition to the appeal to reason, an appeal or rather a statement of facts so presented as to develop a sense of fear of the results of incontinence is of great value. The fear that their physical efficiency as fighting men will be lowered has proven a factor in the restraining of Army and Navy men from illicit intercourse.

This knowledge concerning the cause, method of transmissal and results of venereal disease, and in addition the appeal to the sentimental side of the man is accomplished by lectures, motion pictures and exhibits all carefully arranged and staged so as to make a lasting though not gruesome impression on the mind of the soldier or sailor.—H. E. Kleinschmidt, *Social Hygiene*, January, 1919, 27. (*D. G.*)

Busy A. P. H. A. members will be the first to fulfill the quota of "a member per member." Decide NOW Whom you will invite to membership.

Prophylactic Vaccination Against Pneumonia.—During the past four years, Lister, working in South Africa, was able to immunize a large number of individuals by prophylactic vaccination against the three most important types of pneumonia that are prevalent there. Not a single case of pneumonia of the type immunized against, developed in the cases that were treated. The vaccinated individuals were under observation for nine months. In the U. S. army thousands of troops were vaccinated against types I, II, and III, after very favorable results were obtained when the first men were inoculated. The vaccine, as prepared, contains the three types of pneumococci. A single dose of 1 cc. given subcutaneously is sufficient to produce immunity. The reaction is not more severe than that following the anti-typhoid inoculation.—*Medical Insurance and Health Conservation*, January, 1919. (*M. P. H.*)

To Keep School Child in Health.—The Massachusetts State Department of Health is performing a valuable public service to citizens of the state by sending out vast quantities of "Food Rules for School Children" to teachers and parents throughout the state.

FOOD RULES FOR SCHOOL CHILDREN.

1. Begin the day by drinking a glass of water, and drink at least six glassfuls during the day.
2. Do not go to school without eating breakfast.
3. Eat regularly three times a day.
4. East slowly and chew all food well.
5. Drink milk every day—four glasses are not too much.
6. Eat some breakfast cereal every day.
7. Eat some vegetable beside potato every day.
8. Eat bread and butter every day—dark coarse breads are best.
9. Eat some fruit every day. Spend pennies for apples instead of candy.
10. Do not eat candy between meals. Eat candy and other sweets only after a regular meal.
11. Do not drink tea or coffee; it does the body no good, but harms it.
12. Do not eat or touch any food without first washing the hands.
13. Do not eat fruit without first washing it.
14. Do not eat with spoon or fork that has been used by another person without first washing it.
15. Do not drink from a cup that has been used by another person without washing it.
16. Do not eat from the same dish with another person. (*M. T.*)

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Nature of the Sex Problem.—The stand often taken by even high authorities that gonorrhea and syphilis are not crimes but diseases is shortsighted. It is well recognized that 90 to 95 per cent of venereal disease is caused by the breaking down of moral barriers. These barriers constitute the first and firmest line of defense against the venereal plague and every effort should be exerted to preserve it intact.

The moral barrier is largely under the command of those social agencies that concern themselves with the morals of society. The pulpit should recognize that the aid it can give in keeping this line of defense intact offers the biggest opportunity to do lasting good. The difficulty lies in presenting an understanding of the problem to others. Much study has been given to this phase and the wise man will avail himself of the quantities of carefully prepared literature before attempting to lecture on the subject.

Once the moral barrier has been broken through the second line of defense is sanitation. Here the moral problem becomes a physical problem and the health officer takes command. Gonorrhea and syphilis must be dealt with as are smallpox, tuberculosis and typhoid fever, that the disease be not spread to the morally loose, the innocent traveler, the unsuspecting companion, to the wife and to the children even unto the third and fourth generation.—*N. C. Health Bulletin*, Oct., 1918.

(*M. T.*)

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Extra Cantonment Work Around Camp McClellan.—As an example of what the Public Health Service has done in controlling disease and improving sanitary conditions in extra cantonment areas, the following account bears witness: The P. H. S. took charge of the health work in Calhoun County Ala., in August, 1917. Since then campaigns have been waged to improve sanitary conditions in many ways. Over 50 square miles of land, and 125 miles of streams and ditches were continuously treated in order to control malaria, so that in 1918 not a single individual in the county became infected there. Surveys were made of rural conditions, leading to the installation of 538 sanitary concrete privy vaults, the protection of well water supplies and the screening of numerous homes. Typhoid fever was greatly reduced during 1918. Anti-typhoid inoculations had been given to 12,313 individuals. It is believed this aided materially in diminishing the amount of typhoid fever. Milk and other food supplies were placed under sanitary control, 700 cows were tested for tuberculosis, and a modern pasteurizing plant is now nearing completion; 2,010 food handlers were thoroughly examined of whom 28 were excluded because of venereal disease. The schools were inspected and the school children examined. Public health nurses were employed. A laboratory was established, and the regular tests performed by a public health laboratory were carried on. During 1918, when smallpox became unusually prevalent, 16,874 persons were vaccinated. A venereal disease clinic was established and 305 cases were treated free. The vital statistics were also greatly improved. In addition, liquid chlorine machines were introduced to safeguard the public water supply. Now that the emergency no longer exists, and the P. H. S. officials are about to give up the work, the county is planning to carry on the work itself along lines recommended by the Service.—*Report to Calhoun Co., Board of Health*, Jan. 22, 1919. (*M. P. H*)

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If interested in the New Members, look for their Names in the Colored Insert.

A New Disease.—In the spring of 1918 a number of cases of an unusual disease appeared in London and Sheffield, England. The symptoms were languor, apathy and drowsiness which increased to lethargy. There was also a progressive muscular weakness which finally disabled the individual completely. There were also unusual cerebral and cerebrospinal symptoms. At first it was thought to be due to food which had been infected with Bacillus botulinus but this hypothesis was adequately disproved. It was also believed that the disease might be poliomyelitis but this explanation also proved unsatisfactory. The disease died out so rapidly, that the experiments which were started had not made sufficient progress either to identify the disease or to recognize the etiologic factor. The disease is called *encephalitis lethargica* and has been placed on the list of notifiable diseases throughout England and Wales for a period of one year. It is possible that the lowered resistance of the people enables a hitherto saprophytic organism to become a temporary pathogen. This would emphasize the importance of maintaining the vital resistance of the individual at its highest point at all times. Reference to the disease is made editorially in the *Journal of the A. M. A.* for February 8, 1919. A special report on the disease has been issued by the Local Government Board. (*M. P. H.*)

Epidemiology of Diphtheria.—A statistical study of 1,000 deaths due to diphtheria has brought out several interesting points. It was noted that laryngeal diphtheria was far more prevalent than other forms, pharyngeal was next, and the nasal form last. The frequency of deaths from the laryngeal form may be due to failure of physicians to detect this deeper infection, and to faulty technique in taking cultures. For proper technique one needs good light.

Analysis of the deaths by days elapsing before a physician was consulted shows that 23 per cent were sick a week before medical advice was sought. Of the total deaths 7.6 per cent occurred in "unrecognized" cases, that is in these cases the physician failed to take cultures and have them examined. It was noted that sudden death occurred in 5.2 per cent of cases, and in many cases lack of nursing care and early release were the responsible factors. One striking feature was noted—in no instance was antitoxin given intravenously. It is recommended that this procedure be used in those cases which are seen late in the disease.—Carey, B. W., *Boston Med. and Surg. Jour.*, January 16, 1919, 67. (*D. G.*)

New Modified Milk for Infant Feeding.—From three years' experience at the Cleveland Babies' Dispensary based upon observation of 311 cases the conclusion is reached that it is possible to obtain an excellent nutritional result, according to our present standards, without the aid of butter fat in the food, if the food is similar to breast milk in its protein, carbohydrate, salt and water content, if the substituting fat contains an adequate amount of fat-soluable growth factor, and if the fat is similar to breast milk fat in other respects, namely, in saponification number, iodin number, etc., and if, further, an anti-scorbutic is given with this product, called S. M. A. (Synthetic Milk Adapted).

Better results have been obtained with it than with any other method which was used. And inasmuch as it can be used for small infants, a few weeks old, as well as for older infants up to a year without changing its character, but merely regulating the daily amount, it also appears to be a great factor in simplifying infant feeding, from the standpoint of the physician and the infant welfare station.

In addition the feeding of this product makes possible the saving of a large part of the butter and milk supply.—Gerstenberger, Ruh, et al., *Amer. Jour. Dis. of Child*, January, 1919, 1. (*D. G.*)

("Synthetic Milk Adapted" would seem to be a somewhat misleading term. A true synthetic milk should be built up from materials other than milk, while milk is set forth by these authors as the basis of their product.—Ed.)

Disinfection of Diphtheria Carriers.—The author confirms his previous good results in the disinfection of diphtheria carriers by means of nasal and pharyngeal insufflations of powdered anti-diphtheritic serum. According to him this treatment is actually the best to rid the carriers of their germs. Surprisingly good results were obtained by the same method using anti-meningococcus serum.—Roskam, J., *Ann. Inst. Pasteur*, June, 1918, 255. (*D. G.*)

You'll feel mighty cheerful when you realize that you have done your bit toward a more effective A. P. H. A. Decide now whom you will invite to membership.

Beginning Adolescence and Susceptibility to Tuberculosis.—In their campaign against tuberculosis health officers have long recognized the special danger of tuberculosis infection in infancy. In seeking to guard against such infection they have established preventoria, provided for the pasteurization of milk supplies, and sought to educate the public regarding the peculiar susceptibility of infants to tuberculosis infection. However, when one considers how difficult it often is to separate the infant from the open case of tuberculosis, especially tuberculosis in the mother, it will not be surprising to find that the first year of life still witnesses a very high death toll from tuberculosis infection.

The remarkable statistical inquiry reported by Hess, in the Journal A. M. A., January 11, 1919, shows that still another age period must be regarded as critical for tuberculosis—namely, the period of beginning adolescence. It is curious that this fact has heretofore escaped recognition. After all, its discovery required only the simplest kind of a tabulation of tuberculosis deaths by age of the decedent.

Taking the actual number of deaths from tuberculosis in New York, Chicago, and Philadelphia and arranging them by single years of life, Hess presents the following instructive table. In considering these figures it will be well to bear in mind, as he suggests, that the susceptibility to infection must antedate, by at least a year, the mortality from the disease.

DEATHS FROM TUBERCULOSIS (ALL FORMS) IN THREE LARGE CITIES ACCORDING TO SEX AND YEARLY PERIODS.

Years	New York 1916		New York 1917		Chicago, 1917		Philadelphia, 1917		Total		Grand Total
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
5	22	25	23	29	7	9	4	4	56	67	123
6	22	17	16	14	9	9	11	8	58	48	106
7	16	13	24	13	9	6	9	4	58	36	94
8	17	14	19	13	3	6	3	9	42	42	84
9	12	9	10	20	3	2	5	1	28	32	60
10	9	17	10	9	1	4	4	5	24	35	59
11	12	10	9	9	5	3	6	6	32	28	60
12	10	15	10	**22**	1	6	1	7	22	**50**	72
13	17	**32**	17	23	4	**11**	4	8	42	74	**116**
14	11	31	15	38	7	12	2	**20**	20	101	121
15	18	42	15	34	6	21	5	18	44	115	159
16	**36**	54	**45**	75	4	17	**14**	26	**89**	172	261
17	61	60	49	60	**15**	31	18	25	143	176	319
18	64	84	65	75	12	30	15	24	156	213	369
19	82	87	74	97	37	36	30	39	223	259	482
20	91	82	100	102	45	42	37	38	273	264	537
21	94	86	101	99	38	47	37	31	270	263	533
22	112	106	105	98	53	50	38	41	308	295	603
23	107	105	117	111	49	67	38	36	311	319	630
24	93	98	121	96	69	48	40	25	323	267	590
25	130	98	124	108	40	50	49	41	343	297	640
26	110	104	140	109	74	51	38	44	362	308	670
27	131	98	137	84	70	49	47	22	385	253	638
28	135	111	149	96	84	49	49	27	417	283	700
29	120	78	135	81	61	48	36	32	352	239	591
30	150	97	155	92	67	43	46	36	418	268	686

This table shows that there is a marked increase in the absolute mortality from tuberculosis at about the thirteenth year of life (last column). The sudden increase corresponds to maturity, and, it will be noted, occurs in girls at 12 and in boys at 16 years of age.

"How" says Hess, "are we to interpret this sudden increase of deaths from tuberculosis? The most convincing interpretation of these figures seems to be that they are governed by the onset of maturity, by the evident but little understood forces that become potent at puberty. No other explanation accounts so fittingly for the sudden and precocious alteration in the reaction of the female to tuberculosis infection, and to the later but equally significant impetus in the mortality of the male."

Here, then, is a definite task for health officers and others engaged in preventive medicine—to so rouse public interest in the increased susceptibility of children at puberty, that parents will make every effort during this critical period to safeguard the health of their children. On the whole this ought not to encounter any serious obstacles; good food, plenty of fresh air, sufficient rest and recreation, the correction of physical defects—these are practically attainable in most cases and will work wonders. (*C. F. B.*)

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Infant Welfare Clinics in Small Towns.—The plan followed by the Minnesota Board of Health for the establishment of infant welfare clinics in the smaller towns is as follows: When a request for a clinic is received the head nurse visits the community, explains the object of the work, advises what is necessary in the way of equipment, volunteer assistants, etc., and a day is set for the clinic. In a letter to the local physicians inviting them to attend it is indicated that healthy babies as well as sick ones (up to age of 5 years) will be received, advice given as to proper diet, general hygiene, etc. These clinics are continued at two or three months intervals only upon condition that the community employ a public health nurse to do follow-up work. —Huenekens, E. J., *Archives of Pediatrics*, December, 1918, 718. (*D. G.*)

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Germinated Beans and the Prevention of Scurvy.—It has been noted by Chick and Hume that germinated pulses are rich in antiscorbutic vitamines. This fact was utilized by the author in treating many cases of scurvy among Serbian soldiers, by feeding beans which were allowed to germinate. The results obtained were remarkable; and the conclusion is reached that dry beans develop upon germination an amount of antiscorbutic vitamine equal to, if not greater than, that contained in fresh lemon juice. These results point to the practical application of germinated pulses for the prevention of scurvy and in the opinion of the author this would be the easiest and cheapest method by which to prevent the occurrence of scurvy in an army in the field.—Wiltshire, H. W., *Lancet*, December 14, 1918, 811. (*D. G.*)

Statistics on the Influenza Epidemic in New York City.—The epidemic in New York City began on September 15 and ended on November 16. During this period 10,886 deaths from influenza and 9,722 deaths from lobar and bronchopneumonia were reported. This epidemic proved to be much more fatal than any of the previous pandemics of this disease. It also differed from that of 1891 in that the mortality in the age groups up to 55 was from twice to fifteen times as great in 1918. Above 55, the mortality was about the same in each epidemic. Furthermore it is true that the age groups under 15 suffered very little from the infection. Since these age groups include the bulk of the public school population, the agitation for closing the schools during the epidemic was without any foundation. Sixty-seven per cent of all the deaths due to influenza and pneumonia occurred in the age group from 15 to 45; 1,013 deaths due to influenza-pneumonia, occurred among those in the 28th year of life. This age suffered most. Next came the age of 29, with 817 deaths; then 30, with 730 deaths; then 24, with 530 deaths.

The lowest number of deaths reported for any single day was 12. This occurred on September 15, and the number increased daily, until October 20, when 809 deaths were reported. This was the maximum number of deaths for any one day. The week showing the highest mortality was the fifth when 5,260 deaths were reported. The rate of increase of influenza deaths ran parallel with the increase of pneumonia deaths. The epidemic followed practically a similar course in Philadelphia, Baltimore, Buffalo, Boston and Newark. The death-rate per 1,000 population in these cities for the week showing the maximum mortality was as follows: Philadelphia, 138; Baltimore, 119; Boston, 84; Buffalo, 80; Newark, 54 and New York, 48. The death-rate per 1,000 population for these cities for the period of the epidemic was Philadelphia, 53; Baltimore, 47; Boston, 40; Buffalo, 33; Newark, 32; New York, 27. The epidemic seemed to affect the large cities in the middle west less than the Eastern centers of population.

The following table is of interest because it shows the effect of the epidemic on different portions of the population in New York City.

District Number	Population	Race	Population per Dwelling	Death-Rate per 10,000 from Influenza-Pneumonia
1	102,000	Russian, Polish, Austrian } Jews	60	16
2	131,000	"	60	14
3	75,000	Italian	50	18
	84,000	Italian	47	24
5	110,000	Americans, Germans, Irish	30	22
*6	45,000		16	17
*7	34,000		14	15

* Districts 6 and 7 abounded in private houses and high class apartments. Sanitary conditions here were ideal.

—Dr. William H. Guilfoy, *Monthly Bulletin*, N. Y. C. Department of Health, December, 1918. *(M. P. H.)*

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The Next Step in the Tuberculosis Movement.—The *British Journal of Tuberculosis* (January, 1919) in a symposium on the "Next Step in the Tuberculosis Movement" has gathered communications from the leading medical men and public health workers in England. According to Dr. E. W. Hope two things are essential: first there must be available a specially qualified staff of trained clinicians to make early diagnosis; and secondly there must be sufficient institutional accommodation for cases needing this form of treatment. Sir Clifford Allbutt maintains that prolonged sanatorium residence is to be deprecated because it is "a loose-end kind of life." He suggests the colony, where life becomes more serious. Sir Thomas Oliver points out that farm work cannot long be endured by many men, and for them occupational inducements must be held out, such as is obtained at tuberculous colonies. J. C. Smyth recommends the establishment of complete state control of the tuberculous, which should include a scheme for the compulsory segregation of the infectious, and their maintenance in colonies. In the opinion of Claude Lillingston the present trend is toward the sanatorium colony, where the consumptive may remain for years, partly as a worker, partly as a patient, happily filling his life with useful avocations. According to R. S. Walker the next step in the crusade will be the provision of hospitals for advanced cases and the opening of open air schools for delicate children.

(D. G.)

If the Association sent a representative to personally ask you to co-operate in the campaign, would you refuse him? Of course not! Then won't you give a signed letter from your president the same courteous response.

Fit to Win.—At the Boston City Club, recently, Major W. H. Sawyer of the Venereal Disease Division, S. C., presented the educational moving picture entitled "Fit to Win." This is the same film as the one entitled "Fit to Fight," but is adapted to the conditions now, when the men are returning from the war.

Dr. E. R. Kelly, who presided, summarized the accomplishments of the campaign waged by the Massachusetts Health Department against venereal diseases during the past year. Twelve thousand cases of venereal disease were reported. Of these 3,500 were cases of syphilis and 8,500, of gonorrhoea. Reporting of cases is done entirely by the use of numbers instead of names. Free treatment is offered to those who cannot pay. Arsphenamine is employed for this purpose. This chemical is manufactured by the state at the cost of about 25 cents a dose. It is estimated that 100,000 to 150,000 doses can be manufactured a year. Before the war, salvarsan cost $4.50 a dose. The development of arsphenamine is the result of special researches carried out under the direction of the Massachusetts Health Department. In addition, 28,000 specimens were examined in the State laboratories for venereal disease. The program also calls for a campaign of education. This consists of lectures, selected literature and in addition, the individual education of the person affected. Steps are also taken to compel the infected persons to take the necessary treatment. Nearly 50 per cent of the cases reported as dangerously careless, are being compelled to take treatment. The other cases are being investigated and located. Some attempt is also made to repress street solicitation. This work is accomplished through the police. The campaign is also attacking the quack doctor. Dr. Kelley is very well pleased with the results and looks forward to even greater success in the future.

Mr. Kline who is in charge of the insane asylums in Massachusetts said that of admissions to the insane asylums, about one-half were venereal, and could have been saved from the asylum if they had been treated early enough. He emphasized the enormous cost which the state must bear to care for these individuals. Thus for the coming year, it will be necessary to have an appropriation of $6,000,000 in addition to a special appropriation to provide for 450 additional admissions to the asylums. It costs $6.59 per week to maintain each one of the inmates and an average case lasts about three years. The more important of the venereal diseases in relation to insanity is syphilis. Five per cent of the insane finally have paresis. In the recent drafts, 56,256 men were discharged because they were suffering from mental or nervous diseases due to syphilis.

Major Sawyer told how the military authorities controlled venereal disease not only in the army, but also in the civilian population about the camps. This is the first time in the history of the army that such steps were taken. Five out of every six cases of venereal disease that were found among the troops were contracted in civil life, before the draftee entered the service. The rate at which the men contracted venereal disease after they were in the army was 15 per 1,000 per year. This is an exceedingly low rate. So far as possible every case of venereal disease that developed was traced to its origin, and steps were taken to prevent additional infections. Red light districts were closed, street walking was kept down to the lowest possible degree and clinics were established in the extra-cantonment zones. These were under the supervision of the U. S. Public Health Service. Major Sawyer emphasized the fact that the venereal disease fight is of very recent origin. Until recently neither the states nor the service had any power to deal with serious cases of venereal disease or the purposeful shipment of venereals from one state to another. It is important for health workers in this campaign to realize that the greatest motive for action is the health motive and not the moral motive. (*M. P. H.*)

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Red Cross and International Health Conservation.—Through the energetic leadership of Mr. H. P. Davison, chairman of the American Red Cross, there has been formed a League of Red Cross Societies of nations whose purpose is "not only to cure disease, but so far as practicable to cleanse the world and prevent disease and suffering." At the present time, the Red Cross societies of the five great Allied powers—United States, Great Britain, Italy, France and Japan—are represented in the League. It has been decided to call a conference of the Red Cross societies of the world, at Geneva, thirty days after peace shall have been declared.

It is planned that the first efforts of the League will be to "cover the subjects of public health and sanitation, tuberculosis, nursing, child welfare, malaria, and certain other infectious diseases. There would be developed at Geneva an organization which would receive from every Red Cross society in the world any information of interest and importance bearing upon the various subjects in which they were interested. This organization would immediately communicate such information to every other Red Cross organization in the world. By this method the entire world would be kept fully informed of the latest and best practices in various subjects. It is expected that there will be established in Geneva, a bureau which will devote itself, not to the actual study of human diseases, but to the coördination of the results of such studies. —*N. Y. Times*, February 22, 1919. (*M. P. H.*)

A Tuberculosis Colony.—It has been commonly noted that tuberculous patients will not remain for prolonged treatment at a sanatorium. This question has been investigated and it has been found that where provision is made for interesting and suitable work patients can be retained for a very long period. The second factor of importance is the payment of a wage or bonus for work done—for it is obviously not only inexpedient but wrong to turn patients into "servants" of the institution. Far better is it to organize definite trades in properly constructed and well lighted and ventilated workshops, each trade being a definite unit conducted on business lines. With well regulated hours of work and with suitable environment the patient becomes less self-centered and rapidly ceases to be engrossed in his feelings and his symptoms, and attains a growing confidence in his strength and in the improvement of his position.

Consumptive labor can under special conditions be employed without detriment to the health of the patient. At Papworth Hall Colony where the matter has been investigated, patients reside in model cottages in the village, carrying on their trades and so far maintaining their health. In connection with this colony there is a very large poultry farm, a joinery shop, a cabinet maker's shop, and a boot repairing shop. The wages for the work done in these shops are paid out of the receipts from the sale of the goods manufactured, and it is interesting to note that in the boot repairing department competition with the outside world has resulted in a satisfactory manner. The industry is run on strict commercial lines. In addition the colony has its hospital for advanced patients and veranda wards for less severe cases.—Varrier-Jones, P. C., *British Jour. Tuberculosis*, January, 1919, 14. (*D. G.*)

NO CHANCE FOR TUBERCULOSIS HERE.

Much has been said and written about the advantages of open-air rooms in schoolhouses and of roof-gardens. The charming view here presented, through the combined courtesy of the People's Institute and the Child Health Organization, illustrates the latter far better than can any description. The place is the roof of Public School No. 40, in New York, and these little children from the lowly homes of the city are combining joy and benefit. The marks in the foreground betoken games for out of school hours; the children are in the poses of a dancing lesson,—"the joy of expression in rhythmic exercise," it has been admirably expressed,—while the environment is that of the busy, bustling metropolis.

STATE HEALTH NOTES.

Notes on Legislation.—In Ohio a bill introduced by Senator Davis of Youngstown and now in the hands of the public health committee of the upper house is intended especially to relieve insanitary conditions in thickly settled districts due to stream pollution. Efforts of the State Department of Health to improve conditions under existing laws has been unsuccessful, hence the proposed legislation. It undertakes this by the creation of joint sanitary districts.

Ohio has under consideration the "big health bill," namely that introduced by Representative Hughes to revise the system of local health administration throughout the state. The bill proposes to organize each city of more than 25,000 population and each county into a health district under a whole-time health officer. This bill, which has been reported favorably, will, if passed, provide for the whole state the standard of public health protection now enjoyed only by the largest cities.

In Minnesota there is a bill before the legislature which proposes to establish a board of health for each of the counties with authority to make and publish orders and regulations not inconsistent with the statutes of the state. Approval of such regulations by the State Board and by the attorney general is necessary to validate them and following such approval violation of such regulations shall be a misdemeanor. The bill enters into detail in its seventeen sections, outlining organization, duties of county boards, requirements for officers, relationships of parents, etc. It does not, however, provide for full-time county health officers.

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Illinois.—During the first week in March five cases of so-called lethargic encephalitis have been officially reported to the Division of Communicable Diseases of the State Department of Public Health, and a number of other cases unofficially reported are being investigated by district health officers. On March 7th lethargic encephalitis was made a reportable disease in Illinois through rules and regulations issued by the Department of Public Health.

On account of the increased demand for full-time medical health officers, which has followed the recent epidemic of influenza, the State Department of Public Health has established a registry for such public officers. Questionnaires are being sent to physicians interested in public health work who are presumed available for municipal health positions. Qualifications indicated in these questionnaires are passed upon by a committee of physicians appointed for that purpose, and the applicants are graded according to their special training and experience. These questionnaires will be furnished to all health officers desiring municipal positions in Illinois on application to the Director of Public Health, State House, Springfield.

Conferences are being held in different sections of the state by representatives of the State Department of Public Health, the Illinois Tuberculosis Association, the Boards of County Supervisors and the Trustees of County Tuberculosis Sanitaria for the purpose of outlining the initial plans for the thirty-three county tuberculosis sanitaria whose creation was determined at the autumn election of last year. All of these sanitaria will be free for rich and poor alike, and will have in connection with them county tuberculosis dispensaries, and free visiting nurse service. Forty county tuberculosis sanitaria have been established in the state during the past two years, largely through the efforts of the Illinois Tuberculosis Association.

In conjunction with the work of the Division of Social Hygiene of the State Department of Public Health, the Division of Diagnostic Laboratories has announced free Wassermann tests for all persons regardless of their financial condition. In times past, such tests were made by the state only for indigent persons. The adoption of the new policy has resulted in a very large increase in the number of specimens examined.

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Indiana.—Statistics compiled by the State Board of Health, and just completed, show the awful havoc wrought by influenza in the months of September, October, November and December, 1918. The grand total of deaths from influenza-pneumonia in the months named, was 9,114. In the same months of 1917, the deaths from the same causes totalled 961. We therefore, says the report, must credit the increase of 8,153 deaths to influenza-pneumonia. The report says there were more deaths of children than was first supposed. Six hundred and fifty-two infants under one year succumbed to the disease, while 1,001 died in the age period of 1 to 5. In the age period of 20 to 30, the deaths numbered 2,479; 30 to 40, 2,019. There was a considerable drop after the age of 40 as appears from the fact that in the next ten-year period 40 to 50, there were 620 deaths. And the drop continued, for in the age period 50 to 60, there were 298 deaths; 60 to 70, 265.

The report says, "If Indiana had had efficient all-time health officers, very probably one-half of this slaughter would have been prevented."

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Kentucky.—The first step towards the organization of the Kentucky State Public Health Association was taken on February 17, when a gathering of citizens assembled in Louisville at the call of Col.

Arthur T. McCormack. A plan of organization is to be presented shortly, when the association will be formed. Dr. Lee K. Frankel was the principal speaker and outlined the coming importance of work in public health. "We are at the beginning of a movement for the benefit of the public health," said Dr. Frankel, "but there are certain fundamental things that we must realize. First of all that training is necessary, if we are to do efficient health work. At the present time we are in need of trained health workers who shall be well paid and able to give their entire time to their public health duties." The speaker called attention to the scanty pay of the average administrator of health, made note of the effect of politics in the selection of these men, and asserted that in this country there are many of them who lack the very foundations of the education which should qualify a man for such a position.

Maryland.—A conference of the Boards of Health of Maryland was called to order in Baltimore in February with some 130 officials registering names. The project has been under consideration for some time, but on account of the war it has not hitherto been practicable. The morning session was devoted to outlining the six departments of the State Board, each director speaking of his own department, and the organization of public health work in the counties by Dr. John A. Ferrell of the International Health Board. In the afternoon four papers were presented, "Tuberculosis," by Dr. John S. Fulton; "Venereal Diseases," by Major William H. Sawyer, M.C., U. S. A.; "Local Public Health Administration in the States," by Dr. Allen W. Freeman, Ohio State Health Officer, and a lecture by President Goodnow of Johns Hopkins.

For the evening session Dr. William H. Welch, President of the Maryland State Board, Dr. Alan J. McLaughlin, formerly Massachusetts State Health Commissioner, and Dr. Benjamin S. Warren, Assistant Surgeon-General, U. S. P. H. S., were the speakers, and there was an exhibition of the venereal diseases films. The morning session of the second day took up the questions of closing schools in times of epidemics, vaccination of school children against smallpox and influenza in Maryland, with special speakers and general discussion.

Massachusetts.—Boston is planning to enlarge its health program. Dr. W. C. Woodward, Health Commissioner of the city of Boston, is planning to enlarge the activities of his department. He proposes to add to the personnel of the department sixteen new inspectors with an increase in the pay-roll of $27,400 per annum. It is planned to have a supervisor of housing at $4,000, to establish a bureau of social hygiene with a supervisor at $3,000, a child hygiene bureau whose director shall get $2,500, and a bureau of public health education with a supervisor at $2,000, together with a statistician at $2,000 a year. (M. P. H.)

At the meeting of Boston citizens to present the plans for the Central New England Sanatorium, Dr. Eugene R. Kelley, State Health Commissioner, took the opportunity to refute the claims of some who assert that public health work is of little consequence. Such individuals base their statements on the idea that health authorities were really powerless against the influenza epidemic, but the statistics of health work tell a very different story. Even with the influenza mortality, which pushed up the deaths per thousand of population to 18.7, the figure was less than the usual death-rate of only thirty years ago. The rate in Massachusetts from 1885 to 1888, which were normal years, was 19.5. Public health work may be credited with so great a decrease in the mortality rate that a return to the old figure for a single year seems like a calamity. Instead of showing that health administration has done nothing, the outbreak of influenza emphasizes the splendid work that has been accomplished almost imperceptibly in the reduction of the toll of disease. (M. G. H.)

New Jersey.—In the extension of child hygiene work through the State of New Jersey one of the problems which the division has definitely attacked is that of bringing under a central control the many agencies which work along child welfare lines. The plan is being developed in close coöperation with all the interested societies, the Child Welfare Committee of the Council of National Defense taking the lead. At this date agreement has been reached that there shall be a State Council of Child Wel-

Think! Are your school medical inspectors members of the A. P. H. A.? the industrial sanitarians? The members of your health department? Call them up, write them, or see them before you forget.

fare or Child Hygiene, whose chief function shall be so to plan the work of the state that multiplication of effort and waste of resources shall be avoided. Propaganda and legislative work will be left to this council. It will be affiliated with the American Association for Child Hygiene. The member societies maintain their identity, but, in their child welfare activities, accept the plan of the council and otherwise place their resources, so far as possible, at its service; as for example: the Motor Corps of the National League for Women's Service for assistance in rural districts, and Red Cross nurses and supplies where the war need for them has passed. The name by which the council shall be called has not yet been decided upon, as there is a sharp difference of opinion among the members as to whether welfare or hygiene is the more inclusive and the more significant term.

Baby welfare stations are increasing in number, there being nine in operation now under the supervision of the division and four more soon to be opened.

The Division of Midwifery has become active under the newly appointed supervisor and has begun study of the midwife situation in New Jersey. The names of the licensed midwives in two counties have been secured and a personal visit to the home of each has been made, with a view to discovering the character of the work done by her. Already several abortionists have been found and their licenses have been revoked.

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New York City.—During the current season the Health Department, in cooperation with the Department of Education, has been carrying forward series of lectures in Brooklyn and Manhattan addressed to adults and to which school children have not been admitted. The series, which presents two lectures by each speaker in different halls and two days apart, includes for its authorities, Dr. S. Josephine Baker, Dr. Maude Glasgow, Dr. H. C. Ferris, Dr. S. Dana Hubbard, Dr. I. H. Goldberger, Miss Josephine Biederhase and Dr. E. Eliot Harris, and gives studies on the child as affected by the war, the abnormal child, the common eruptive diseases of children, physical efficiency and the elements of nutrition.

The Health Department has worked in coöperation with the Federal authorities in a venereal disease campaign, which has endeavored to secure more complete reporting on the part of the physicians, and the more complete education of the people. A new plan has been under investigation and test for filtering the outflow of sewers, a device that is mechanically operated and is apparently working successfully. There has been a reorganization of the Division of Industrial Hygiene which includes a new corps of medical and lay inspectors as well as clinic physicians.

The announcement is made of a practical training course in public health administration to be given by the Public Health Committee of the New York Academy of Medicine in coöperation with the New York Bureau of Municipal Research. The course will be six weeks in length, beginning April 30, the first three weeks of which, till May 23, will be devoted to lecture conferences on special subjects, the remainder of the time being given to field study and observations in institutions in and about New York City. The list of speakers in the conferences is particularly attractive, including as it does so many of the American Public Health Association members: President Frankel, Dr. Sedgwick, Dr. H. W. Hill, Dr. C. V. Chapin, Dr. L. L. Lumsden, Alice Hamilton, M. D., Dr. James A. Miller, Ella Phillips Crandall, R. N., Dr. Charles F. Bolduan, Dr. George W. Goler, and others. Dr. Carl E. McCombs at 261 Broadway, Bureau of Municipal Research, is in charge of the enrollments.

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New York State.—A conference of the sanitary supervisors with the directors of divisions of the State Department of Health was recently held at the Department's offices at Albany.

At the first meeting which was held in the amphitheatre of the Albany Medical College, Dr. H. A. Bray, acting superintendent of the New York State Hospital for Incipient Tuberculosis at Raybrook, gave an address on the best methods of diagnosing incipient tuberculosis. X-ray plates were demonstrated.

Dr. J. S. Lawrence, chief of the Bureau of Venereal Diseases, discussed pneumonia serum and its administration. Dr. J. C. Ayer, of the same bureau, demonstrated the administering of arsphenamine. The meeting was also attended by health officers from Albany, Schenectady and Rensselaer counties, members of the local medical profession and senior medical students. In the evening a talk was given at the Elk's Club on syphilis and gonorrhea by Dr. Honsinger of the Bureau of Venereal Diseases, the talk being followed by a presentation of the film, "Fit to Win." The second day, a report was given by Dr. Charles C. Duryee on his work of scoring health activities in cities. This report was followed by a history of influenza epidemics by Dr. Otto R. Eichel. A conference was also held between the chief of the Bureau of Venereal Diseases and the members of his staff.

There is in progress a Residence Course for Health Officers, under the auspices of Syracuse University, which is not limited to health officers but is open to

all physicians who wish to acquaint themselves with the latest developments in public health work.

A new graduate course is also being given on infectious diseases and public health through the coöperation of the Albany Medical College and the State Board of Health. The course which is open both to physicians and health officers has no connection with undergraduate instruction.

Capt. J. Herbert Brewster and Color Sergeant C. Alpha Howland, members of the Engineering Division, have returned from service with the American Expeditionary Forces in France and are expected to report for duty as assistant engineers in the Department at an early date.

Captain Brewster was commissioned as First Lieutenant in September, 1917, and was ordered overseas in February, 1918, with assignment to the 116th Engineer Regiment, 41st Division, which was engaged in replacement service. In May, 1918, Captain Brewster was placed in command of Company D, 116th Engineer Regiment, receiving his commission as Captain in September.

Color Sergeant C. Alpha Howland enlisted in July, 1917, and was made First Sergeant of the 102d Engineer Train attached to the 27th Division, The New York State National Guard Division, which trained at Spartanburg, S. C. This division was ordered to France in April, 1918, and as is well known has been in some very heavy engagements. Sergeant Howland was engaged in the supply train service and saw considerable service on the front line positions until ordered to the Candidate Officers' Training School. He had finished the course in this school and was to be commissioned at the time of the signing of the armistice.

This state is presenting to its citizens some striking health facts, for example, that every year one Ohioan in every 700 dies of tuberculosis, coupled with which is the information that each advanced case is a focus for further infection unless very carefully looked after, and that every incipient case, which might probably have been cured, may develop into an advanced case, lacking this care. The fact is pointed out that, despite the importance of the measure, half of the counties of the state have failed to take advantage of the law which permits the establishment of inter-county hospitals, while not a single county has as yet established a tuberculosis dispensary.

In its educational material with reference to typhoid the state sets forth the fact that "all that is necessary to stamp out typhoid is to prevent the contamination of food and water by filth." There has been a decrease in the number of reported cases during the past year of about 10 per cent, but the authorities call the attention of the people to the fact that "Ohio is still behind the leading states in this respect."

Pennsylvania.—Col. Edward Martin has been appointed Commissioner of Health for the State to take the place of Dr. Samuel Dixon, deceased some months since. In the interim Dr. B. Franklin Royer has been Acting Commissioner, resigning from the Board a month ago. Doctor Martin announces these appointments: Dr. Howard Hull, Camp Hill, Cumberland Co., to be Chief Medical Inspector; Dr. Leon Gans of Philadelphia to be chief of the Genito-Urinary Laboratories, and Dr. John L. Laird to be Chief of the Laboratory Dispensaries. Doctor Hull was Associate Chief Medical Inspector under Doctor Royer, whose former place he now fills; Doctor Gans moves into the former place of Doctor Laird, who in turn takes the position formerly occupied by Dr. J. B. Rucker, Jr., resigned. Doctor Hull is a native of Chambersburg, educated in the public schools of Pasadena, Cal. He is a graduate of the high school of Philadelphia, was graduated at Jefferson Medical College in 1908, receiving the gold medal in Obstetrics and Pathology. He was successively in the Philadelphia Hospital for Contagious Diseases, commissioned in the Medical

Wake up and climb on the band wagon. Price of admission: one new member for the A. P. H. A. Everybody's doing it!

Ohio.—Legislation to provide a full-time health officer for every section of the state, adequate nursing service, the strengthening of measures against venereal disease, the lowering of the typhoid rate by strict supervision, the reduction of diphtheria mortality by furnishing free antitoxin, and better care of infants, is in part what is considered in the Hughes bill now under consideration. The establishment is provided for of more than 100 health districts instead of the 2,200 that now exist, and these will require a full-time health officer each against which the state has now only five such officers.

Reserve Corps, First Lieutenant in the Medical Corps, U. S. A. Attached to the Nineteenth Infantry he was sent to Vera Cruz. He resigned from the army in 1915 to become Associate Chief Medical Inspector under Doctor Dixon. Doctor Gans is a graduate of the University of Pennsylvania in 1905 and became resident physician in the Philadelphia Polyclinic Hospital. He was surgeon in the Out-Patient Department of the Medico-Chi and taught for nine years in the college. He served as surgeon in the Spanish-American War and in 1917 was enrolled as Captain in the Medical Corps, U. S. A. He originated the "Personal Touch" method for securing the services in the Medical Reserve Corps, first used in Pennsylvania but subsequently adopted by the Surgeon-General for all the states. Doctor Laird is a graduate of the University of Pennsylvania in 1906, and till his connection with the State Health Department was a practising physician at Reading.

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Rhode Island.—In October, Gov. R. Livingston Beeckman called Dr. Lydia Allen DeVilbiss, Director of the Division of Child Hygiene, Kansas State Board of Health, to make a study of health conditions affecting children and to formulate a program for Child Welfare. The program outlined by Doctor DeVilbiss includes the following recommendations:

Infant Hygiene. The establishment of a Division of Child Welfare and a Division of Vital Statistics in the State Board of Health, also provisions for the prompt reporting of births and deaths.

School Hygiene. The establishment of a Department of Health and Physical Education in the State Normal School and the employment of a Director who shall be *ex-officio* State Director of Medical Inspection in the Schools; a revision of the school laws permitting boards of education to employ school nurses and physicians and to expend school money for the correction of health defects, and providing for the annual physical examination of school pupils, teachers and janitors, also sanitary inspection of school buildings.

Children in Industry. Amendments to the factory inspection law increasing the age limit and the educational qualifications for employment. Under the present Rhode Island law a child who is 14 and who can read and write a few simple English sentences can obtain his working papers.

Crippled, Defective and Dependent Children. Recommending a state psychiatrist to examine such children, especially institutional children and children brought before the Juvenile Court.

The report also included a recommendation for the appointment of a Children's Code Commission to undertake a more extensive study of the laws affecting the welfare of children so that they may be revised and codified.

A number of bills covering points of the program have been introduced in the R. I. Assembly.

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Virginia.—Dr. E. C. Levy, formerly Health Officer of Richmond, has been appointed Director of Public Welfare of the same city and has entered into his new duties. This department now undertakes the whole of the functions of the old Board of Health together with several other activities. Dr. Roy K. Flanagan, who succeeded Doctor Levy as Health Officer of Richmond, has now accepted a position with the State Health Department. Dr. Powhatan S. Schenk, for the past ten years Health Commissioner of Norfolk, has been appointed Director of Public Welfare, a department that includes not only the health functions, but those of the city charitable and correctional institutions. Within the care of this department will be included the city clinics, police surgeons, together with the customary items of public markets, city veterinarian, etc. The present year sees the inauguration in Norfolk of an intensive campaign for the control of venereal disease. The department has established a hospital exclusively for this group of maladies and has purchased two other buildings, one for detention house for incorrigibles and another for the extension of the clinic which was established in September, 1918. Since then more than 3,000 cases have been treated.

The Virginia Anti-Tuberculosis Association obtained a budget of about $10,000 to make surveys of tuberculosis similar to those of Michigan. The survey force included a director, a field nurse and a physician. The director undertook an educational campaign by means of lectures before women's clubs, charity societies, school leagues, lodges and industrial societies. The nurse went into the field with the director and visiting local physicians enlisted their coöperation for clinics. During the first fifteen months of operation twelve sets of clinics were held. No complete record of applicants has been kept, since frequently in the country districts an entire colored congregation would present itself for examination. In the first county surveyed, which had an average of 75 deaths a year, the Association has now 225 cases under supervision. Approximately 50 cases have entered the state sanatoria in addition to others which were sent to local hospitals wherever such institutions were available. In two communities nurses were employed by local committees. It is planned to increase the scope of the work. The legislature of Virginia has passed a direct tax law to be used for additional hospitals. The field work is believed to be an important method of educating these populations.—*Bulletin National Tuberculosis Association.*

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst, R. P. Albaugh and P. M. Holmes.

Effects of Dust Inhalation.—Some dusts are dangerous; others are harmless. Why? In an admirable article, A. Mavrogordato gives the results of painstaking experiments which explain why there is such a variety of reactions to dust inhalation, and why certain dusts are deadly and others innocent. Dusts from the following materials were used in the experiments,—coal, shale, flint, flue, precipitated silica, and quartz from the Transvaal. The practical aim of the inquiry was to determine what material could be safely used for "stone dusting" as in coal mines (to prevent explosions), and to devise some means of treating the dangerous dusts so as to nullify their evil effects. The experiments were performed in the laboratory of Doctor Haldane at Cherwell, Oxford. All the dusts were examined under the microscope directly and with crossed Nicols which showed that coal, shale, and precipitated silica dusts are amorphous; flint, flue, and quartz dusts, on the other hand, showed double refraction, angulation, and sharp edges. All are hygroscopic; coal dust most so, flue dust least so. Guinea-pigs were used throughout the experiments. They were exposed to the various dusts two hours a day for twelve consecutive days (24 hours all told) in a closed apparatus especially designed to permit constant observation and frequent sampling to determine the concentration of the dust cloud surrounding them. An electric fan in the bottom of the box kept the dust in motion. The author exposed different sets of pigs to varying amounts of dust of each type, the idea being to approximate the exposures to those found under working conditions. Mixed coal and flint dusts were also used. Some of the animals were killed immediately at the close of the experiment, others at intervals of a week, three weeks, three months, and ten months. Sections from the lungs and films from the cut surfaces were then microscoped.

The results showed that with *intense dusting* the effect of all the dusts was practically the same (congestion, cell proliferation, pigmentation, emphysema, but no fibrosis, although this might have developed had the animals been preserved longer). Three animals died of acute pulmonary edema while being dusted, possibly pneumonic infection in lungs irritated by dust similar to the "Acute Pulmonary Silicosis" occasionally noted in workers, due to inhalation of large quantities of dust over a short period.

When *moderate amounts of dust* were used, certain differences were noted: Coal and shale dusts were readily ensnared by mucus, by the bronchial and pulmonary epithelial cells and cells in the lymphatics, and, eventually, in all cases, expectorated in clumps of mucus. The lungs, after the coal dust exposures, required about one year's time to again pass for normal. On the other hand, flue, flint, and quartz dusts left far more slowly. Shale dust was intermediate. These latter types of dust were absorbed by the cells and remained to the end. They showed little or no tendency to cause an initial catarrhal reaction but, instead, later, conspicuous cell proliferation (with phagocytosis and plasma cell formations). They caused no increase in polynuclear cells nor was fibrosis produced. It was found that colorless dusts blackened the lungs, nevertheless. Coal and shale dusts increased in the lungs at first rapidly, but after about the sixth exposure, the rate of elimination appeared to approach the rate of invasion, so that lungs after twelve exposures were no more ladened than after six. On the other hand, flue, flint, and quartz dusts accumulated steadily though less rapidly as the experiments went on.

To summarize: (1) Coal and shale dusts enter the lungs readily, but, under conditions mentioned, are removed and do not produce permanent lesions. The lungs finally pass for normal (after exposure has ceased and time interval is sufficient). (2) Flue, flint, quartz, and crystalline silica tend to remain *in situ* and form plaques, which later on may be the sites of fibrosis. They produce permanent lesions. (3) Various dusts have different rates of elimination, for such part as is eliminated, hence it is worth while to limit all dust clouds, hoping that the rate of elimination may approach the rate of invasion. Dosage is, therefore, an important factor. (4) Coal dust mixed with small quantities of the more tenacious dusts (flue, flint, quartz, and crystalline silica) gives the impression that it tends to free the lungs of these dusts. This may explain why crystalline silica dust does not always produce grave lung disease, *i. e.*, it is inhaled along with some substance which produces catarrh and consequent expectoration. (5) The various dusts fed per mouth for four weeks showed no accumulation in the digestive canal (intestinal mucous membrane and abdominal lymph glands).

Under the conditions of these experiments:

Dusts that make mischief are dusts that accumulate (flint, quartz, flue, crystalline silica).

Dusts that are eliminated are dusts that produce a marked initial reaction with much shedding of epithelium (coal, shale).

Dusts that accumulate do not produce so marked an initial reaction, there being much less shedding of epithelium.

Dusts that produce an initial reaction tend to carry out with them the more inert.—A. Mavrogordato, *Jour. Hygiene*, London, Oct., 1918, pp. 439–459. (*P. M. H., E. R. H.*)

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Final Report of British Committee.—The British Ministry of Munitions has issued the final report of the Health of Munition Workers' Committee. The various problems covered by the memoranda have been brought together into one report and emphasis is given to the close relation and interdependence which exist between the problems involved. Conclusions regarding the various problems have been summarized. It is pointed out that it is yet too early to draw any final conclusion as to the permanent effect on the health of the munition workers of the abnormal conditions which existed during the war. The committee states, however, that all the recommendations contained in the memoranda have been generally accepted as reasonable and have been widely adopted. A list is presented of the memoranda together with the issues of the *Monthly Review* or bulletins of the Bureau of Labor Statistics in which they have been summarized or printed in full.—*Monthly Labor Review*, Bureau of Labor Statistics, VII–3, Sept., 1918. (*R. P. A.*)

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T. N. T. Poisoning.—The salient points in connection with T. N. T. poisoning are summarized and the fact mentioned that the diminution now shown in incidence of the disease brings out the value of scientific research into causes of industrial diseases. The most common symptom in connection with poisoning is toxic jaundice. It was for this reason that an order was made under the Factory Act, making cases of toxic jaundice, instead of T. N. T. poisoning, notifiable. Medical practitioners and occupiers require a definite symptom to guide them. However, for every case of toxic jaundice, there are at least 30 cases showing symptoms of minor illness such as pallor with cyanosis, depression and gastric derangement. The necessary steps for the prevention of poisoning are outlined. Reference is made also to the risk run from nitrous fumes both in the nitric acid plant and nitrating house.—T. M. Legge, M. D., *Monthly Labor Review*, VII–3, Sept., 1918. (*R. P. A.*)

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Poisoning by Dinitrobenzol.—Seven cases were studied. Exposure to the vapors of dinitrobenzol produce a bluish coloration of the mucous membranes, general malaise, etc. These symptoms disappear 2 or 3 days after cessation of work. In some people who develop tolerance the cyanosis is present but no other symptoms appear. Dinitrobenzol is a poison of the blood and also has some action on the central nervous system. It enters the body less by the lungs than directly through the skin as in the wearing of clothes saturated with it. That is why the symptoms appear several hours after the subjects have finished work. Employees should be instructed in the toxic nature of this material.—Steiner, O., *Correspondez-Blatt für Schw. Aerzte*, Aug. 24, 1918, 1139. (*D. G.*)

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Dinitrophenol Poisoning in France.—At least four fatalities have occurred in connection with dinitrophenol work in this country. The hot months will probably see additional deaths unless suitable precautions are taken. Poisoning from dinitrophenol is not uncommon in France and several American factories have adopted the process of manufacture used in France. Two French observers, Professor Martin and Dr. M. Guerbet, point out that certain processes are noted as being attended with poisoning to a greater or lesser extent. The symptoms of both mild and severe intoxication are outlined and, the post-mortem appearances described. Emphasis is given to the fact that hot weather hastens intoxication by increasing evaporation of the substances worked with and by diminishing the elimination of the poison through the urine. Dinitrophenol is absorbed through the respiratory tract, the digestive tract and the skin. Derrien's diazotation reaction is described and means for the prevention of poisoning outlined.—Alice Hamilton, M. D., *Monthly Labor Review*, VII–3, Sept., 1918. (*R. P. A.*)

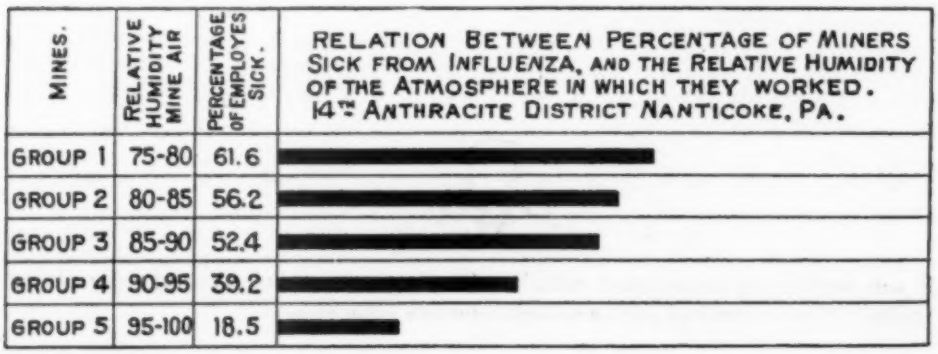
If you don't bring in one new member, how can you expect 2,499 others to bring in theirs? The success of this campaign depends upon you.

Early Diagnosis of Plumbism.—Apfelbach cautions that with the advent of compensation for industrial diseases it behooves the physician to acquaint himself with the early signs and symptoms, so vividly pictured in the text-books. They are often missing in the very early cases of this intoxication. Lead poisoning may be mono-symptomatic; there may be exposure to lead and excretion of lead without clinical manifestations. There are forms of plumbism without the blue line, wrist drop, basophilic degeneration, and colic. Early diagnosis is made upon a history of lead exposure, the presence of constipation plus one of the cardinal symptoms which are colic, constipation, tremor, basophilic degeneration of red cells, blue line, pallor and anæmia; anæmia and tremor are early signs. The writer analyzes the records of three series of cases: First, 934 cases of plumbism reported to the State Department of Labor of Illinois from 1912 to 1917; second, 72 cases personally examined for the author, and third, records obtained from examination of 150 house painters, one-third of whom showed signs of poisoning. Five charts are presented showing the combinations in which cardinal symptoms occur and other pertinent data.—George L. Apfelbach, *Am. Jour. Med. Sciences*, Dec., 1918, pp. 781. (*P. M. H.*)

Factory Conditions and Tuberculosis.—Using pre-war statistics and personal observations of factory conditions, Professor Moore has written a very excellent article showing the effect of urban employment upon the incidence of pulmonary tuberculosis. The need for a National Industrial Health Service is effectively argued, setting forth a constructive program calling for 1,500 full-time physicians to carry out the plan of action. The big outstanding feature of this article, and a powerful argument in favor of the above services, is that city males in the working age period (25–65) have a death-rate from tuberculosis double that of city females and rural females and males in the same age period. Professor Moore believes that working conditions and lack of adequate medical supervision are responsible for this condition. His statements are supported by four charts illustrating contrasts in death-rates in different age periods and in urban and rural districts.—Benjamin Moore, *Lancet* (London), Nov. 9, 1918, p. 618. (*P. M. H.*)

Shop Safety Organization.—A suggested plan for shop safety organization is presented as discussed on the last day's session of the Industrial Safety Congress. Details of shop safety organization are given and rules outlined governing the organization and employees. Sources of safety literature and information are outlined and a number of safety, sanitation, and health rules presented.—*Bulletin*, New York State Indust. Com., Vol. IV, No. 3, Dec., 1918. (*R. P. A.*)

Influenza and Humidity.—In the January issue of *Safety Engineering*, John J. Walsh, inspector of the fourteenth anthracite inspection district, Pennsylvania, presents a very interesting report with reference to influenza among coal miners in Pennsylvania. Some vagaries of incidence of the disease were noticed among the miners. Different mines showed different incidences and even the same mine was not uniform in its different parts, although general conditions were much the same in the different mines. Experiments were made to see if an increased amount of carbon dioxide or a reduced oxygen content of the mine air would have some effect and Mr. Walsh undertook to carry these on. Various factors, oxygen, carbon dioxide, and wet and dry bulb temperatures were plotted against percentages of influenza cases. None of the factors that were expected to influence the rate of disease were implicated, but the relative humidity of the air in which the men worked appeared to follow the rate of incidence. The chart which is reproduced through the courtesy of *Safety Engineering*, tells the story in very direct fashion.—(*J. R.*)



Mechanical *vs.* Natural Ventilation.—Each has its clear and well-defined field, and the problem is to determine what air conditions are desirable in a given space with a given type of occupancy, occupation, etc., and then to decide from experience and from tests in similar buildings whether these conditions can be maintained without mechanical ventilation. If they can, let us by all means make use of natural methods. The factors to be considered are temperature, humidity, and air motion; the dust, bacteria and CO content, and the degree of objectionable odors present, while distribution also should be given due consideration in a confined occupied space. Natural ventilation by means of windows is satisfactory in offices, light manufacturing industries, etc., where the work done or the process carried on does not materially contaminate the air, provided:

(a) 900 to 1,000 cubic feet of space per occupant is available.

(b) Windows are provided on four sides of the space, and have an area of from 10 to 12 per cent of the floor area.

(c) Humidifying devices are installed that will maintain a wet bulb temperature of not less than 57°.

(d) Thorough cleanliness is maintained.

Also natural ventilation by means of windows is possible in school class rooms provided:

(a) Space per occupant is not less than 800 cubic feet.

(b) The window area is not less than 12 per cent of the floor area, with windows on at least two opposite sides of the room.

(c) Artificial humidifying devices capable of maintaining a wet bulb temperature of 57° in cold weather are provided, with air-circulating fans to aid in distribution.

(d) Oiled floors and scrupulous cleanliness are maintained.

On the other hand, patent window ventilators, cloth screens, and similar devices for ventilation of class rooms should be unqualifiedly condemned, since they give consideration only to one of the seven factors concerned, viz., the induction of outside air. To obtain an adequate air supply is the simplest part of the ventilation problem. Children can be made just as miserable by shutting off the heat, with a marked saving in fuel. To get the air space required for window ventilation would mean practically doubling the number of schools in the country. The tests in the New York schools reported by Dr. Josephine Baker may result in good or harm, depending upon how fully they are interpreted. The results should awaken public school officials to their laxity and carelessness in the installation and possibly in the operation of these mechanical equipments. To conclude from the report that natural ventilation is to be preferred to mechanical, would be a grave mistake and result in much harm. Just as our clothing, our food and water supply, the houses we live in are artificial developments, we must conclude that natural methods in ventilation ofttimes are not the best. The cry of "back to nature" is the cry of the reactionary; of the men who acknowledge defeat.—Dr. E. Vernon Hill, *Jour. of Amer. Society of Heating and Ventilating Engineers*, Oct., 1918, pp. 737–742.

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Comparative Casualties of War and Industry.—An interesting comparison of war and industry was that the army of three million Pennsylvania workers suffered 577,053 casualties during the two and one-half years period ending July 1, 1918, with 7,575 fatalities, which is greater than the entire army that Canada and Pennsylvania has sent against Germany. One report was that out of every thousand cases of disability in industry, 547 are cases of disease and 453 are cases of wounds and injuries. Interesting comparisons are also made covering amputations, blindness, and extreme mutilations. This bulletin is also devoted to a discussion of occupations for the disabled.—*The Bulletin, Pennsylvania Department of Labor and Industry*, Vol. V, No. 2, 1918, pp. 121–124.

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Chronic Arsenic Poisoning.—The absurdly insignificant exposures to arsenic which may produce arsenic poisoning in a person who has once been poisoned is well illustrated in the case cited by Samuel Ayres in the *Jour. A. M. A.*, Dec. 28, 1918, pp. 2122–2123.

Most of us are inclined to put off a job of this sort. But the wise man gets it out of the way and then feels better. Get YOUR member today.

The Manual Method Recommended for Resuscitation.—After considering all evidence presented, the Third Resuscitation Commission, composed of fifteen prominent physicians, physiologists, navy, army, P. H. S., and industrial physicians, came to the conclusion that the Shäfer prone-pressure method for resucitating the drowned, those overcome by gas or suffering from electric shock, injuries to the head, injuries to the chest, cases of shock, poliomyelitis, diphtheretic paralysis, poisoning by opiates, etc., was preferable to any of the other manual methods, and the installation of apparatus of the types submitted such as the pulmotor, the lungmotor, and the Meltzer apparatus should be confined, for the present, to properly equipped institutions under medical direction. Dr. Yandell Henderson of Yale University qualified his support of the resolutions, as adopted, with a statement that critical time is lost in waiting for special respiration devices and their application so that those who are first treated manually on the spot have the best chances of recovery. "Thus today, the apparatus in public use is, on the whole, contributing very materially to decrease the saving of life."—*Science*, Dec. 6, 1918, pp. 562–566.

The resolutions as formally adopted by the Commission are worthy of statement in full and are here given together with the official summing up of the general situation.—EDITOR.

In the discussion following the presentation of methods and evidence to the Commission the following important facts were emphasized:

1. That in most accident cases no resuscitation apparatus is at hand for immediate use.

2. That reliance upon the use of special apparatus diminishes greatly the tendency to train persons in the manual methods and discourages the prompt and preserving use of such methods.

3. That police officers or physicians often interfere with the proper execution of manual methods, in that they direct that the patient be removed in an ambulance to some hospital, thus interrupting the continuance of artificial respiration.

4. That in many hospitals the members of the staff are not all acquainted with the methods of artificial respiration.

5. That in medical schools instruction is not properly provided for students in the manual methods of artificial respiration.

In view of these facts the following resolutions were adopted by the Commission:

1. The prone-pressure of Schäfer method of resuscitation is preferable to any of the other manual methods.

2. Medical schools, hospitals, fire and police departments, the army and navy, first aid associations, and industrial establishments in general, should be urged to give instruction in the use of the prone-pressure method of resuscitation.

3. Individuals who, from accident or any other cause, are in need of artificial respiration, should be given manual treatment by the prone-pressure method immediately on the spot where they are found. It is all important that this aid be rendered at once. The delay incident to removal to a hospital or elsewhere may be fatal, and is justifiable only where there is no one at hand competent to give artificial respiration. If complications exist or arise, which require hospital treatment, artificial respiration should be maintained in transit, and after arrival at the hospital, until spontaneous respirations begin.

4. Persons receiving artificial respiration should, as much as possible, be kept warm and the artificial respiration should be maintained till spontaneous breathing has been permanently restored, or as long as signs of life are present. Even in cases where there is no sign of returning animation, artificial respiration should be kept up for an hour or more.

5. A brief return of spontaneous respiration is not a certain indication for terminating the treatment. Not infrequently the patient after a temporary recovery of respiration stops breathing again. The patient must be watched and if normal breathing stops, the artificial respiration should be resumed at once.

6. Artificial respiration is required only when natural respiration has ceased. In cases of simple unconsciousness from any cause in which natural respiration continues, artificial respiration should not be employed without medical advice.

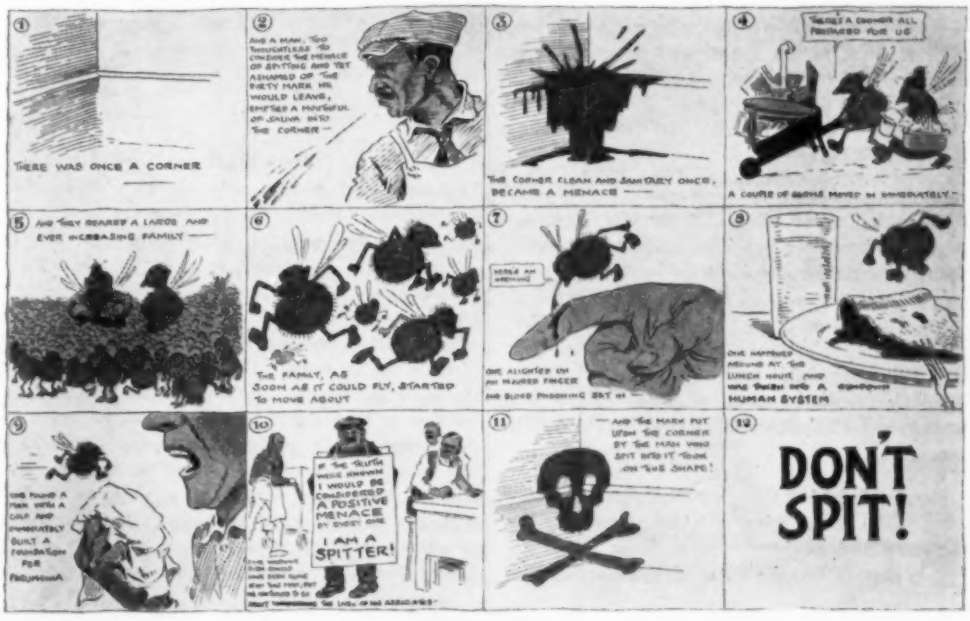
7. The Commission recommends that in cases of gas asphyxiation, artificial respiration, whether given by a manual method or by special apparatus, should be combined when possible with the inhalation of oxygen from properly constructed apparatus.

8. With regard to the employment of mechanical devices for artificial respiration the Commission feels that it ought not at present to take a definite stand either for or against any particular form of apparatus. However, the Commission recommends that the use and installation of apparatus should be confined, for the present, to properly equipped institutions under medical direction. The Commission recognizes the great need of simple devices capable of performing artificial respiration reliably and efficiently. It therefore recommends a careful study of the problem, directed toward *the development of a reliable method appropriate for general adoption*. Such studies can best be carried on in properly equipped hospitals and laboratories.

The Division of Industrial Hygiene and Medicine of the U. S. Public Health Service.—This Division has gotten well under way. Its plans were outlined in the Industrial Hygiene Section of the American Public Health Association in Chicago in December. Past Assist. Surg. A. J. Lanza is in charge. Dr. C. D. Selby is head of the Section on Industrial Medicine, and Mr. Bernard J. Newman, of the Section on Investigations and Research. Other sections are in formation. Zones have been established and offices opened in a number of larger cities. Dr. R. P. Albaugh, formerly Director of the Division of Industrial Hygiene, Ohio State Department of Health, is in charge of the New York office. Dr. P. M. Holmes, formerly with the Division of Industrial Hygiene of Toledo, is in charge of the Philadelphia office. An office has been recently opened in Chicago in charge of Mr. Hobart, and one in Cleveland in charge of Mr. W. H. Gould. The personnel of each office consists of an industrial physician, a hygienist, a sanitarian, an illuminating engineer, a chemical engineer, a ventilating engineer, and a production engineer. The Division will deal with industrial conditions as they affect the health of the industrial worker. A Section on Personnel and Education will be formed to increase the educational facilities in the schools of the country for the training of men in this field. Industrial nurses are also to be trained in hospital training courses.

There will be a registry of industrial physicians, sanitarians, and nurses, to which employers may apply for assistance. The following universities have so far established courses of training in industrial hygiene: Harvard, Johns Hopkins, Ohio, Pennsylvania, and Yale, while Cincinnati and Washington Universities are about to begin. More information may be obtained by writing to the Working Conditions Service, 202 Ouray Building, Washington, D. C.

SPREADING INFECTION.


THERE WAS ONCE A CORNER
THE CORNER CLEAN AND SANITARILY ONCE, BECAME A MENACE
THE FAMILY, AS SOON AS IT COULD FLY, STARTED TO MOVE ABOUT
I AM A SPITTER!
DON'T SPIT!

This cartoon, which is a reproduction of one circulated by the National Safety Council through the courtesy of the B. F. Goodrich Co., tells its own story. It is true that the morphology of the germ is somewhat at variance with the figures that microscopists present, and the modes of life depicted are not precisely in accord with the latest discussions on the subject, but the lesson is brought home by it to the people, 6,000,000 of whom, it is said stop and look at these hints towards a better and safer country to live in. The application is very direct, and the real mark that the expectorant put in the corner is brought out above in such fashion that no one can misunderstand it.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

New Culture Medium for the Isolation of the Glanders Bacillus.—To a glycerine (5 per cent) agar an aqueous solution of parafuchsin is added in the proportion of 1 to 10. Upon this medium B. mallei grows readily, decolorizing the medium. Many organisms are inhibited by the dye.—S. Kondo and H. Oguni, *Jour. Cent. Vet. Med. A. (Tokyo)*, 30, No. 12 (1917); *Abst. Bact.*, 2, 204 (1918).

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New Specific Serum Reaction for the Diagnosis of Pregnancy.—The reaction gives 94 to 98 per cent correct results. One cc. of serum is added to 0.1 cc. of a combination of placenta and iron. Contact for three hours is permitted. The material is filtered and the filtrate is washed with water. Twenty drops of 18 per cent hydrochloric acid and an equal amount of 50 per cent potassium ferrocyanide are added to the filtrate and the mixture is shaken with 2 cc. of ether. A positive reaction is indicated by a reddish color.—F. Thoenen, *Muenchen. med. Wochenschr.*, No. 24 (1917); *Abst. Bact.*, 2, 254 (1918).

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Typhoid Vaccine as a Therapeutic Agent.—Commercial typhoid, or typhoid-para-typhoid vaccine, prepared for prophylactic inoculations, has unique and very marked therapeutic properties if injected intravenously. The conditions in which it has been applied were acute arthritis, chronic arthritis, gonorrheal arthritis, rheumatic fever, syphilitic affections, psoriasis, lichen planus and eczema.—W. C. Cadbury, *Med. Rec.*, 95, 144 (1919).

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Simple Method of Carrying Meningococcus Cultures.—The composition of a liver-agar favoring the growth of meningococcus is given. The culture is planted into the water of condensation taking care not to tip it over the surface of the slant. After 24 hours at 37° C., carefully tilt the tube so that the water of condensation wets the slope for the distance of about 5 mm. or less and incubate again. The organism will not grow above the old growth as far as the liquid has wetted the slant. This can be repeated until the entire slant is covered. Thus a culture may be kept alive approximately three to four weeks.—J. Bronfenbrenner and M. J. Schlesinger, *Jour. Med. Res.*, 39, 217 (1918).

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The Micro Plate.—Description of method of observing bacterial reactions in very small quantities of medium. The method is serviceable only with solid or semi-solid media. The reactions which may be observed are gelatin liquefaction, amylolytic action, hydrogen sulfide formation, reduction of nitrates, and sugar fermentations.—J. Bronfenbrenner and M. J. Schlesinger, *Jour. Med. Res.*, 39, 267 (1918).

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Some Simple Culture Media for B. Influenzæ.—Very profuse growth of *B. influenzæ* can be obtained: 1, from blood boiled in agar; 2, from agar to which has been added some of the clear colorless fluid resulting from boiling blood in water; 3, from agar to which has been added blood which has been broken down by a strong mineral acid. If a strong mineral acid is used to break down the blood, sterile blood is not required. The substance which stimulates the growth of *B. influenzæ* is not the colored fraction of hemoglobin. By the addition of brilliant green to the medium pneumococci, streptococci, and staphylococci are inhibited to a much greater extent than *B. influenzæ*. Cultures of *B. influenzæ* can be kept alive for a considerable period on a blood meat medium.—A. Fleming, *Lancet* (London), No. 4978 (1919).

Ever have this happen in your home? Remember how you felt? Well, that's how the A. P. H. A. will feel when you bring your addition to the family. Hurry! Dr. Frankel and the family are in suspense.

On the Vitamines Available for the Cultivation of Bacteria.—A solution practically free of the albumins and coloring matter of the blood, which contains the substance or group of substances (vitamines or hormones of growth) of indeterminate nature necessary for the cultivation of Pfeiffer's bacillus, can be prepared from washed blood corpuscles or from the whole blood. This solution loses its properties if heated above 100° C. It can be filtered through filter paper or through a filter candle.

The authors recommend the following procedure for its preparation: Dilute the defibrinated blood with four volumes of physiological salt solution; heat this dilution for 15 minutes in a water bath at 80° C., with frequent shaking; filter through filter paper or centrifugalize. If the work thus far has not been carried out aseptically, filter through a Chamberland F. The aqueous solution obtained, added to ordinary culture media in the proportion of 5 to 10 per cent, promotes the abundant cultures of Pfeiffer's bacillus. Even with the weak proportion of 1 per cent, growth is obtained, but the cultures develop slowly and the colonies remain small. The blood of birds, the eel or the horse yields the same results. It is the cellular element, not the serum, that contains the vitamine principle.—Agulhon and Legroux, *Compt. Rend. Acad. des Sciences*, Paris, 147, 597 (1918).

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Hemoculture of Typhoid Bacilli in Peptone Glucose Bile.—Bile, to which has been added 1 per cent of peptone and 1 per cent of glucose, is a better medium for the enrichment of typhoid bacilli from the blood than is bile alone. The authors advise the introduction into a certain number of the tubes of a sterile piece of broken glass rod, which with shaking promotes the mixture of the fresh blood and the pepton-glucose bile. If the blood has already coagulated, then only the coagulum is planted in the bile tube and there broken up. (See *Bull. Inst. Pasteur*, 15, 608 (1917).)

If bacterial growth develops, the medium assumes a sanious aspect, becomes clouded and assumes gradually the tint of old chocolate (15 to 24 hours). The paratyphoid bacilli, in contradistinction to the typhoid, gives rise to formation of small bubbles of gas.—Tribondeau and Dubreuil, *Compt. Rend. Soc. de Biol.*, Paris, 81, 130 (1918).

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Method of Staining Spirochætes with Formolated Gentian Violet.—

1. Make a thin smear on a slide; dry.
2. Ruge's acetic formol (formol, 2 parts; acetic acid, 1 part; distilled water, q. s. for 100 parts), allow to act for 5 minutes cold; renew this mordant two times.
3. Replace the acetic formol with an aqueous solution of chromic acid (10 per cent) and allow to act for 10 minutes.
4. Wash in absolute alcohol for 2 minutes and flame.
5. Two minutes exposure to formolated gentian violet (hot) (gentian violet, 1 part; formol, 4 parts; alcohol, 10 parts; distilled water, q. s. for 100 parts).
6. Wash rapidly in water.
7. Blacken the violet with Lugol for 5 minutes.
8. Wash, dry in the cold and mount.

The cellular elements have their protoplasm stained violet and the nucleus black. The bacteria are black, the spirochætes, violet, but more often black, even those which, like the spirochæte of hæmorrhagic icterus, take stains difficultly.—P. Spehl, *Compt. Rend. Soc. de Biol.*, Paris, 81, 305 (1918).

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Quantitative Wassermann.—The degree of lysis secured in the reaction is compared with known concentrations of hemolyzed blood.—K. Taege, *Muenchen. Med. Wochenschr.*, No. 47 (1917).

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Complement Fixation in Tuberculosis.—A series of tests was carried out on 570 soldiers, using a suspension of living bacilli as the antigen, prepared somewhat after the method of Miller. With two slightly different methods the author obtained 74 and 77 per cent of positive reactions in cases with active pulmonary tuberculosis. It was also noted that the test was positive in 21.8 per cent of clinically non-tuberculous cases. The latter figure, which is rather high, may be due to the lighting up of dormant lesions sufficiently to produce antibodies without signs or symptoms.—Fidlar, E., *Lancet* (London), Dec. 21, 1917, 844. (*D. G.*)

Selection Hypothesis (An attempt to furnish a uniform explanation for Immunity, Tissue Immunity and the Manifestations of Immunity).—This article is in the nature of a preliminary communication, edited under the form of propositions, concerning a work which the author promises will appear shortly *in extenso*.

Acquired immunity is the result of a conflict between the cells of the body and the virus. Among the cells, there are strong and weak cells; the weak are the ones first attacked by the virus, then destroyed. This operates, then, to the advantage of the more resistant cells and of those cells which have come to replace the disappeared cells from which they inherit an increased resistance, thus establishing an immunity.

After passages of the microörganisms through the animal, their virulence is increased. The weaker microörganisms succumb in the conflict with the cells; the stronger survive, as well as those derived from them.

According to this hypothesis of the survival of the fittest, the degree of the immunity is in proportion to the number of cells destroyed and to the number of cells replacing those destroyed. If, then, as a result of a natural infection with typhoid, cholera or smallpox, the immunity acquired is more substantial than that conferred by artificial vaccination, it is because in the course of the naturally contracted infection there are many more cells destroyed and subsequently replaced than is the case with vaccination.

The author attempts to explain also upon his hypothesis of selection of the origin of antibodies, their specificity, the reaction of fixation of complement, normal antibodies, and anaphylaxis.—L. v. Liebermann, *Deutsch. Med. Wchnschr.*, Leipz. u. Berl., 44, 313 (1918).

Experimental Production of Amœbic Dysentery in the Guinea-pig.—Reference is made first to the work of Lynch on the amœbiasis of the Norway rat. Chatton fed three guinea-pigs material containing the cysts of *dysenteriæ*. One animal died at the end of 20 days from cæcal amœbiasis. With a scraping from a portion of this cæcum, he inoculated three other guinea-pigs through the rectum; one of these died in 9 days from an amœbiasis of the same type as that of the guinea-pig of the first lot. There were no clinical symptoms of dysentery and no lesions in the rectum; only the cæcum was involved.

The amœbæ recovered from the lesions had the characteristics, nuclear among others, of *dysenteriæ* and differed as much from the amœba normally present in the guinea-pig as from the *Amœba coli*. Chatton presents figures of these non-pathogenic amœbæ side by side with the amœbæ recovered from the experimental lesions.

In a later work published the next year in the same journal, Chatton describes the lesions obtained and states that they have never been observed before in the guinea-pig. They consist of hyperplastic reaction of both epithelial and connective-tissue cells. The epithelial reaction is a Lieberkühnal hyperplasia of the cysto-adenomatous type; the hyperplasia of the glands caused the rupture of the muscular mucosa; the sub-mucosa was infiltrated, greatly thickened and ultimately became hyperplastic itself. This connective-tissue reaction is a sarcomatous neoplasm of the fusocellular type with new formation of vessels by the neo-plasmatic cells themselves; by reason of the rôle of the lymphoid cells in its genesis and from the absence of metastases, Chatton calls it lymphosarcomatoid hyperplasia. These hyperplasias were associated with necrotic lesions and inflammatory reactions, such as are observed in man and the cat. The author thinks that the amœbæ, attracted by the mucus, penetrate the mucosa by the glandular ducts and attack the culs-de-sac where the muciparous cells predominate.—Ed. Chatton, *Bull. Soc. Path. Exot.*, 10, 794 (1917); 11, 28 (1918).

The greater A. P. H. A. is going to be a fine thing for its members. Are you willing to receive the benefits without doing your share?

Bacteriology and Pathology of Influenza.—Because of the variety of clinical types of cases observed the authors are of the opinion that the activating agent is not a single one, but that several organisms are implicated, and that the malady is not a simple but a compound disease.—Whittingham, H. E., and Sims, C., *Lancet* (London), Dec. 28, 1918, 866. (*D. G.*)

Typhoid Fever Occurring After Prophylactic Inoculation.—Occasional cases occur in which the usual preventive inoculations against typhoid fever fail to protect against the disease, most probably on account of the ingestion of virulent organisms in massive doses. To eliminate such occurrences, sanitary precautions should prevail; but they can succeed only by constant attention to the guarding of food and drink against contamination. No false sense of security from typhoid vaccination should be permitted to relax vigilance in this direction.—C. P. Brown, F. W. Palfrey and L. Hart, *Jour. A. M. A.*, 72, 463 (1919).

Filtrable Poison Produced by B. Influenzæ.—It has been found that the influenza bacillus produces a filtrable poison which is lethal to rabbits. It also deteriorates very quickly. An immunity can be produced against it. The serum of immune animals appears to be antitoxic both *in vitro* and *in vivo*. J. T. Parker, *Jour. A. M. A.*, 72, 476 (1919).

Differentiation of Streptococcus Hemolyticus.—The hydrogen ion concentration at which the human strains of *S. hemolyticus* cease to grow is different from that which limits growth of hemolytic cultures from bovine sources; 95 per cent of all the strains examined were accurately and rapidly classified by the determination of their final hydrogen ion concentration in 1 per cent glucose broth. The human type of *S. hemolyticus* reaches a final hydrogen ion concentration of P_H 5.2 to 5.0, and the bovine type of P_H 4.5 to 4.3.—O. Avery and G. E. Cullen, *Jour. Exp. Med.*, 29, 215 (1919).

Staphylococcus Aureus Pneumonia.—Pneumonia associated with *S. aureus* occurred in almost every organization at Camp Jackson. In general, where the total incidence of pneumonia was high there was a correspondingly larger number of *S. aureus* infections. The treatment of this infection of the lung is extremely ineffectual. The prognosis is always grave, though occasionally patients survive. —H. T. Chickering and J. H. Park, *Jour. A. M. A.*, 72, 617 (1919).

Complement Fixation in Influenzal Pneumonia.—The complement binding factor of serum from influenzal pneumonia patients is probably a very weak one. The results suggest strongly that the influenza bacillus forms specific antibodies that will fix complement when this organism is used as an antigen. Polyvalent antigens did not give more positive results than a monovalent one. Serums that gave positive tests were also found more suitable for the serotherapy of influenzal pneumonia patients. Since some of the reactions were inconstant, it must be concluded that the complement fixation test in influenzal pneumonia cannot yet be accepted as a diagnostic test. The influenza bacillus found in more than 80 per cent of the necropsies was used as an antigen.—F. H. Rapoport, *Jour. A. M. A.*, 72, 633 (1919).

Transmission of Infection Through the Eye.—The eyes offer a relatively large surface area for the reception of droplets sprayed from the mouth of other persons. An organism introduced into the conjunctival sac may be recovered from the nose in five minutes, and from the stool in 24 hours. The upper respiratory tract of a person wearing a properly constructed mask may be infected by exposing the eye briefly to direct droplet spray. This portal of entry is of importance in the transmission of acute respiratory infections.—K. F. Maxcy, *Jour. A. M. A.*, 72, 636 (1919).

Complements in Wassermann Reaction.—The complements of fresh guinea-pig serum varied greatly in fixability. Human complement gave much weaker positive results than did guinea-pig complement. Guinea-pig complement left on the clot and kept in the refrigerator remained fairly constant for three days, while complements which had been removed from the clots deteriorated more rapidly. Ramy's method of preserving complement by sodium acetate was a total failure in the author's hands. Glycerol seemed to prevent deterioration of complement for a few days.—E. H. Ruediger, *Jour. Inf. Dis.*, 24, 121 (1919).

New Method for the Identification of Tubercle Bacilli in Sputum.—The method consists in diluting the sputum with an equal quantity of water and adding a drop of ammonia, then allowing the mixture to stand in a water bath at 50° C. for between 15 to 20 minutes, afterwards adding an aluminum sulfate solution in the proportion of 0.5 cc. to 10 cc. of the sputum mixture, and finally centrifugalizing the deposit and examining it by staining in the ordinary way. The experiments showed this method to be superior to all others tried.—K. E. F. Schmitz and K. Brauer, *Centralbl. Bakt. I. Orig.*, 81, 359 (1918); *Rev. Bact.*, 8, 107 (1918).

Simplified Confirmatory Test for B. Coli.—It is suggested that in the confirmatory test for B. coli, Endo slants be employed instead of Endo plates. The inoculations from the lactose fermentation tubes are made in the butt as well as on the slant. It is claimed that the colonies on the slant appear more typical. Ærobic and anærobic growth may be detected at the same time.—*R. L. Kahn, Jour. Bact.*, 3, 555 (1918).

Study of the Pfeiffer Bacillus.—A serum with pronounced specific properties was obtained from animals immunized with the Pfeiffer bacillus. The serum had a distinct curative action and prevented the death of guinea-pigs after inoculation with lethal amounts. The serum of the immunized animals (goats) was toxic in the case of blood withdrawn too soon after the last injection of bacteria. Intraperitoneal injection of the serum killed guinea-pigs and subcutaneous injection caused edema. Serum from blood withdrawn 20 days after the last injection did not show any toxicity.—A. Latapie, *Compt. Rend. Soc. Biol.*, 81, 833 (1918); *Chem. Abst.*, 13, 233 (1919).

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Variation in Diphtheria Group.—Twenty-five cultures of members of the diphtheria group isolated from various sources were studied. Variations were noted in morphology, in fermentative reactions and in virulence in subcultures derived from one parent strain. The virulence of a strain is not closely correlated with its morphology, nor is it correlated with its fermentative reactions.—F. D. Meader, *Jour. Inf. Dis.*, 24, 145 (1919).

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New Method of Diagnosis of Malaria.—The method depends upon complement deviation in cases of malaria. After a large number of experiments a specific antigen for malaria has been prepared which acted well, diluted 1 to 30 in normal saline. Recently the author used an antigen composed of ten different strains of benign tertian malarial parasites with satisfactory results, and this gives a positive reaction with known cases of benign or malignant tertian malaria. The antigen must be titrated before use to estimate the minimum dose of complement required. The patient's serum is diluted 1 to 10 with normal saline. The test is carried out in the usual way using positive and negative controls. The method used is long fixation in the cold, the tubes being kept overnight in the ice chest. In the morning the sensitized red cells are introduced and the results read after fifteen minutes in the water bath at 37° C. After very prolonged quinine treatment and in cases where there has been no attack of malaria for many months, the blood serum usually gives a negative result. The serums of syphilitic patients give a positive result with this antigen, and it is necessary to exclude this disease.—J. Gordon Thomson, *Brit. Med. Jour.*, No. 3023, p. 628 (1918).

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Agglutination in the Diagnosis of Glanders.—Fifteen strains of B. mallei were tested and one obtained which is constant in its agglutinability with positive sera. The best culture medium is glycerin-potato-agar. No phenol is added to the stock nor to the dilution. A negative reaction by a single agglutination test if not confirmed by the ophthalmic and the complement fixation tests does not prove the case negative. All three tests must be performed in order to pronounce the horse negative. A reaction of less than 1 to 1000 by agglutination is not indicative of glanders in the horse.—Olga R. Povitzky, *Jour. Immunol.*, 3, 463 (1918).

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Reaction of B. Coli on Endo Medium.—During the growth of B. coli on Endo medium adsorbed lactose is broken down first. After 10 to 15 hours incubation, the trace of adsorbed lactose is probably transformed into lactic and other organic acids, and the colony is colored red. On further incubation, the organic acids are probably reduced by the bacteria to aldehyd and alcohol, which volatilize from the surface, leaving the nonvolatile fuchsin behind, thus producing a metallic sheen. Following this, the organisms attack the nitrogenous material. Ammonia and other substances are produced in which the fuchsin goes back into solution, and ultimate decolorization takes place.—R. L. Kahn, *Jour. Bact.*, 3, 547 (1918).

You'll feel mighty lonely when the membership campaign is over, if your name isn't on the roll of honor.